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BIBLIOGRAPHIC INDEX OF AMERICAN ORDOVICIAN AND SILURIAN FOSSILS

VOLUME 2

BY

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BIBLIOGRAPHIC LIST OF GENERA AND SPECIES.

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Observation.—Most of the above citations refer to Lichas in a broad sense.

LICHAS (HOPLOLICHAS) BICORNIS Ulrich. See Amphilichas bicornis.

LICHAS (PLATYMETOPUS) BICORNIS Clarke. See Amphilichas bicornis.

LLCHAS BOLTONI Meek and Worthen. See Arctinurus occidentalis.

LICHAS BOLTINI Hall. See Arctinurus nereus.

LICHAS BOLTONI var. OCCIDENTALIS Hall. See Arctinurus occidentalis

LICHAS BREVICEPS Hall (1863). See Metopolichas breviceps.

LICHAS BREVICEPS Hall (1865). See Dicranopeltis decipiens.

LICHAS BREVICEPS Foerste. See Metopolichas breviceps clintonensis.

LICHAS BYRNESANUS Miller and Gurley. See Corydocephalus byrnesanus.

Lichas canadensis Billings.
Lichas Canadensis Billings, Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 65, fig. 22.
Anticostian (Gun River): East Point, Anticosti.

LICHAS CHAMPLAINENSIS Whitfield. See Amphilichas minganensis.

LICHAS (CONOLICHAS) CORNUTUS Clarke. See Conolichas cornutus.

LICHAS CUCULLUS Meek and Worthen. See Amphilichas cucullus.

LICHAS DECIPIENS Winchell and Marcy. See Dicranopeltis decipiens.

LICHAS EMARGINATUS Hall. See Dicranopeltis decipiens.

LICHAS FABERI Miller. See Amphilichas halli.

LICHAS HALLI Foerste. See Amphilichas halli.

LICHAS HANOVERENSIS Miller and Gurley. See Corydocephalus phlyctainoides.

LICHAS HARRISI Miller. See Arctinurus harrisi.

LICHAS JUKESII Billings. See Amphilichas jukesi.

LICHAS MINGANENSIS Billings. See Amphilichas minganensis.

LICHAS NEREUS Hall. See Arctinurus nereus.

LICHAS (ONCHOLICHAS) OBVIA Schmidt. See Arctinurus obvius.

LICHAS OBVIUS Hall. See Arctinurus obvius.

LICHAS PAULIANUS Miller. See Corydocephalus wesenbergensis paulianus.

LICHAS PHLYCTAINOIDES Foerste. See Corydocephalus phlyctainoides.

LICHAS (DICRANOGMUS) PTYONURUS Hall and Clarke. See Corydocephalus ptyonurus.

LICHAS PUGNAX Winchell and Marcy. See Metopolichas pugnax.

LICHAS (HOPLOLICHAS) ROBBINSI Ulrich. See Amphilichas robbinsi.

LICHAS TRENTONENSIS Hall. See Amphilichas trentonensis.

LICHAS (ARGES) WESENBERGENSIS var. PAULIANUS Clarke. See Corydocephalus wesenbergensis paulianus.

LICHENALIA Hall. Genotype: L. concentrica Hall.
Lichenalia Hall, Pal. New York, 2, 1852, p. 171; Amer. Jour. Sci., 2d ser., 11, 1851, p. 401.—Bassler, Bull. 173, U. S. Geol Surv., 1900, pp. 54, 299.—Grabau, Bull. New York State Mus., 45, 1901, p. 176; Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 176.; Bull. U. S. Geol. Surv., 292, 1906, p. 60.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 165.—Bassler, Bull. U. S. Nat. Mus., 77, 1911, p. 166; Zittel-Eastman Texb. Pal., 1913, p. 347.

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LICHENALIA? CALYCULA James. See Aspidopora calycula.

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Crania corrugata Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 153, figs.

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Early Silurian (Borkholm): Borkholm, Esthonia, Russia.

Plesiotype.—Cat. No. 35775, U.S.N.M.

LICHENALIA CONCENTRICA of authors. See Fistulipora neglecta.

LICHENALIA CONCENTRICA var. MACULATA Hall. See Fistulipora neglecta maculata.

LICHENALIA CONCENTRICA var. PARVULA Hall. See Fistulipora halli.

LICHENARIA Winchell and Schuchert.

Genotype: L. typa Winchell and Schuchert.

Lichenaria Winchell and Schuchert, Geol. Minnesota, 3, pt. 1, 1895, p. 83 (extras, 1893).

Lichenaria minor Ulrich.

Lichenaria minor Ulrich, Geol. Minnesota, 3, pt. 1, 1895, p. 84, fig. 5.

Trenton (Prosser): Near Cannon Falls, Minnesota.

Holotype.—Cat. No. 42950, U.S.N.M.

Lichenaria typa Winchell and Schuchert.

Lichenaria typa Winchell and Schuchert, Geol. Minnesota, 3, pt. 1, 1895, p. 83, pl. G, figs. 10–13.—Sardeson, Amer. Jour. Sci., 4th ser., 8, 1899, pp. 101, 102, figs. 1–4.

Black River: Minneapolis, Minnesota (Decorah); Pauquette's Rapids, Ottawa River, Canada (Leray).

LICHENOCRINUS Hall. Genotype: L. dyeri Hall.

Lichenocrinus Hall, 24th Rep. New York State Cab. Nat. Hist., 1872, p. 216 (adv. sheets 1866, p. 9).—Meek, Ann. Mag. Nat. Hist., 4th ser., 8, 1871, p. 341; ibid., 9, 1872, p. 247; Amer. Jour. Sci., 3d ser., 2, 1871, p. 299; ibid., 3, 1872, pp. 15, 261; Geol. Surv. Ohio, Pal., 1, 1873, pp. 44–51.—Zittel, Handb. Pal., 1, 1879, p. 424.—Miller, N. A. Geol. Pal., 1889, p. 258.—Sardeson, Amer. Geol., 24, 1899, p. 275.—Bather, Treatise on Zool., pt. 3, Echinoderma, London, 1900, p. 77.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 714.

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Richmond (Waynesville): Warren and Clinton Counties, Ohio.

?Mohawkian: Baffin Land.

Lichenocrinus crateriformis Hall.

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Eden (Southgate-McMicken): Cincinnati, Ohio, and vicinity.

Lichenocrinus dubius Miller.

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Eden (Economy): Cincinnati, Ohio.

Observation.—Probably the same as L. crateriformis Hall.

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Maysville (Corryville): Cincinnati, Ohio, and vicinity.

Lichenocrinus pattersoni Miller.

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Trenton (Upper): Covington, Kentucky.

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Trenton (Upper): Near Rogers Gap, Kentucky.

Lichenocrinus tuberculatus Miller.

Lichenocrinus tuberculatus Miller, Cincinnati Quart. Jour. Sci., 1, 1874, p. 346, fig. 38; Jour. Cincinnati Soc. Nat. Hist., 5, 1882, p. 229, pl. 9, figs. 6, 6a.; N. A. Geol. Pal., 1889, p. 258, fig. 351.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 730, pl. 4, fig. 3.

Richmond (Whitewater): Richmond, etc., Indiana; Clarksville, etc., Ohio.

LICROPHYCUS Billings. Genotype: L. ottawaense Billings.

Licrophycus Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 99 (adv. sheets, 1862).—Miller, N. A. Geol. Pal., 1889, p. 125.

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Inocaulis flabellum James, ibid., 7, 1884, p. 164, pl. 9, fig. 8.—Ruedemann, Mem. New York State Mus., 11, pt. 2, 1908, p. 191.

Maysville (Corryville): Lebanon and Bantam, Ohio.

Licrophycus formosum Billings.

Licrophycus formosus Billings, Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 72.

Richmond (English Head): English Head, Anticosti.

Licrophycus hiltonense Billings.

Licrophycus hiltonensis Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 101 (adv. sheets, 1862).

Black River: Near Hilton, St. Joseph Island, Lake Huron.

Licrophycus hudsonicum Billings.

Licrophycus hudsonicus Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 101 (adv. sheets, 1862).

Richmond: Manitouwaning Bay, Lake Huron.

Licrophycus minor Billings.

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Trenton: Ottawa, Ontario.

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Licrophycus ottawense Miller, N. A. Geol. Pal., 1889, p. 125, fig. 49.
Trenton: Ottawa, Peterboro, Belleville, and Lake Winnipeg, Canada.

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Licrophycus robustus Billings, Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 72.
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Licrophycus vagans Billings.
Licrophycus vagans Billings, Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 72.
Richmond: Near West End Lighthouse, Anticosti.

LIMARIA Steininger. See Cœnites Eichwald.

Limaria tennesseæ Troost. Not recognized.
Limaria Tennesseæ Troost, 6th Geol. Rep. Tennessee, 1841, p. 18.
Niagaran: Brownsport, Tennessee.

LIMOPTERA Hall. Genotype: L. macroptera Conrad.
Limoptera Hall, Prelim. Notice Lam., pt. 2, 1869, p. 15; 1st Rep. State Geol. New York, 1884, p. 13; Pal. New York, 5, pt. 1, Lam. 1, 1884, p. 13; 35th Rep. New York State Mus. Nat. Hist., 1884, p. 406c.—Nettelroth, Kentucky Foss. Shells, Geol. Surv. Kentucky, 1889, p. 197.—Miller, N. A. Geol. Pal., 1889, p. 486.—Koken, Die Leitfossilien, Leipzig, 1896, p. 187.

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Avicula limæformis Hall, Pal. New York, 2, 1852, p. 332, pl. 75, fig. 6a–c.
Limoptera? limæformis Clarke and Ruedemann, Bull. New York State Mus., 65, 1903, p. 423 (gen. ref.).
Cayugan (Cobleskill): Schoharie, New York.

LINDSTRÖMIA Nicholson and Thomson.
Genotype: L. columnaris Nicholson and Thomson.
Lindströmia Nicholson and Thomson, Proc. Roy. Soc. Edinburgh, 9, 1876, p. 150.—Nicholson and Etheridge, Mon. Sil. Foss. Girvan Dist., 1878, p. 80.—Roemer, Leth. geog., pt. 1, Leth. Pal., 1883, p. 395.—Miller, N. A. Geol. Pal., 1889, p. 194.—Frech, Palæontographica, 37, 1890, p. 81.—Koken, Die Leitfossilien, Leipzig, 1896, p. 312.—Pocta, Syst. Sil. du Centre Boheme, 39, pt. 2, 1902, p. 182.
Kionelasma Simpson, Bull. New York State Mus., 39, 1900, p. 207. (Genotype: Streptelasma mammiferum Hall.)

Lindströmia? columellata (Hall).
Cyathaxonia columellata Hall, 35th Rep. New York State Mus. Nat. Hist., 1884, p. 415 (extras, 1882, p. 11).
Niagaran (Racine): Racine, Wisconsin.

Lindströmia gainesi (Davis).
Cyathaxonia gainesi Davis, Kentucky Fossil Corals, Geol. Surv. Kentucky, pt. 2, 1885, pl. 104, figs. 1–6.
Lindstrœmia gainesi Foerste, Bull. Kentucky Geol. Surv., 7, 1906, p. 311 (gen. ref.).

Lindströmia gainesi—Continued.

Kionelasma gainesi Simpson, Bull. New York State Mus., 39, 1900, p. 208 (gen. ref.).

Upper Medinan (Brassfield): Near Louisville, Kentucky.

Lindströmia? herzeri (Hall).

Cyathaxonia herzeri Hall, 12th Ann. Rep. Indiana Dep. Geol. Nat. Hist., 1883, p. 275, pl. 15, fig. 14; 35th Rep. New York State Mus. Nat. Hist., 1884, p. 416 (ext. 1882, p. 12).—Lesley, Rep. Geol. Surv. Pennsylvania, P 4, 1889, p. 165, fig.—Miller, N. A. Geol. Pal., 1889, p. 180, fig. 159.

Kionelasma herzeri Simpson, Bull. New York State Mus., 39, 1900, p. 208, fig. 25.

Niagaran (Louisville): Louisville, Kentucky.

Lindströmia lingulifera Foerste.

Lindstrœmia lingulifera Foerste, Bull. Kentucky Geol. Surv., 7, 1906, p. 311, pl. 5, figs. 2a–f.

Clinton (Waco): Near Estill Springs, Panola, and Waco, Kentucky.

Lindströmia whiteavesi Foerste.

Lindstrœmia whiteavesi Foerste, Bull. Kentucky Geol. Surv., 7, 1906, p. 312.

Black River (Leray): Petite Chaudiere Rapids, Ottawa, Ontario.

Lindströmia wisconsinensis (Whitfield).

Cyathaxonia wisconsinensis Whitfield, Ann. Rep. for 1877, Wisconsin Geol. Surv., 1878, p. 79; Geol. Wisconsin, 4, 1882, p. 277, pl. 14, figs. 3-5.—Chamberlin, Geol. Wisconsin, 1, 1883, p. 188, fig.

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Niagaran (Racine): Racine, etc., Wisconsin.

LINGULA Bruguière. Genotype: L. anatina Lamarck.

Lingula Bruguière, Encyclopédie Méthodique, 1, 1792, pl. 250.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 189.—Billings, Canadian Nat. Geol., 1, 1856, p. 33.—Pictet, Traité de Pal., 2d ed., 4, 1857, p. 73.—Meek and Hayden, Smiths. Contr. Knowl., 14, 172, 1865, p. 68.—Hall, Pal. New York, 4, 1867, p. 5.—Dall, American Jour. Conch., 6, 1870, pp. 153, 154.—Miller, Cincinnati Quart. Jour. Sci., 2, 1875, p. 9.—Meek, Hayden's U. S. Geol. Surv. Terr., 9, 1876, p. 7.—Dall, Bull. U. S. Nat. Mus., 8, 1877, p. 43.—Morse, Proc. Boston Soc. Nat. Hist., 19, 1878, p. 266.—Zittel, Handb. Pal., 1, 1880, p. 662.—Winchell, 8th Ann. Rep. Geol. Nat. Hist. Surv. Minnesota, 1880, p. 60.—Miller, N. A. Geol. Pal., 1889, p. 349.—Beecher, Amer. Jour. Sci., 3d ser., 44, 1892, p. 141.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pp. 2, 161.—Beecher, Amer. Nat., 27, 1893, p. 599.—Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 338.—Koken, Die Leitfossilien, Leipzig, 1896, p. 228, fig. 187.—Hall and Clarke, 11th Ann. Rep. New York State Geol., 1894, p. 226.—Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 78.—Beecher, ibid., 1897, p. 110, fig. 5.—Grabau, Bull. Buffalo Soc. Nat. Sci., 6, 1899, p. 181.—Schuchert, Zittel-Eastman Textb. Pal., 1, 1900, p. 307.—Grabau, Bull. New York State Mus., 45, 1901, p. 178; Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 178.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 194.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 890.—Schuchert, Zittel-Eastman Textb. Pal., 1913, p. 374.

Glossina Phillips, Mem. Geol. Surv. Great Britain, 2, pt. 2, 1848, p. 370.—Dall, Bull. U. S. Nat. Mus., 8, 1877, p. 29.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pp. 15, 164; 11th Ann. Rep. New York State Geol., 1894, p. 230. (Genotype: Lingula attenuata Sowerby.)

Palæoglossa (Glossina, preoccupied) Cockerell, Nautilus, 25, 1912, p. 96.

Pseudolingula Mickwitz, Bull. Imp. Acad. Sci. St. Petersburg, 1909, p. 765.—Schuchert, Zittel-Eastman Textb. Pal., 1913, p. 374. (Genotype: Lingula quadrata Eichwald.)

LINGULA ACUMINATA Conrad. See Lingulella (Lingulepis) acuminata.

LINGULA (GLOSSINA) ACUMINATA Hall and Clarke. See Lingulella (Lingulepis) acuminata sequens.

Lingula acutirostris Hall.
Lingula acutirostra Hall, Geol. New York, Rep. 4th Dist., 1843, p. 77, fig. 9 on p. 76; Pal. New York, 2, 1852, p. 56, pl. 20, fig. 5.
Clinton: Wolcott, New York.
Observation.—Based upon a single specimen now lost (Schuchert).

Lingula æqualis Hall.
Lingula æqualis Hall, Pal. New York, 1, 1847, p. 95, pl. 30, fig. 3.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 203, pl. 8, fig. 3.—Walcott, Proc. U. S. Nat. Mus., 11, 1888, p. 480, fig. 3.—Lesley, Rep. Geol. Surv. Pennsylvania, P 4, 1889, p. 342, figs.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 9, fig. 4.
Trenton: Middleville, Trenton Falls, and Rome, New York.
Plesiotype.—Cat. No. 25351, U.S.N.M. (Walcott).

LINGULA ANTIQUA Rogers. See Obolus (Westonia) rogersi.

LINGULA ANTIQUA Hall. See Lingulella (Lingulepis) acuminata.

LINGULA ATTENUATA? Hall. See Lingula (Palæoglossa) trentonensis.

LINGULA AURORA var. Hall. See Obolus (Westonia) stoneanus.

Lingula (Palæoglossa) belli (Billings).
Lingula belli Billings, Canadian Nat., 1st ser., 4, 1859, pp. 431–432, figs. 7, 8; Geol. Surv. Canada, 15th Rep. Progress, 1863, figs. 47a–b, p. 124.
Obolus belli Walcott, Mon. U. S. Geol. Surv. 51, pt. 1, 1912, p. 386, pl. 38, figs. 3a–b.
Glossina belli Raymond, Ann. Carnegie Mus., 8, 1911, p. 216, pl. 33, fig. 1.
Chazyan.—Island of Montreal, Canada (Aylmer); Valcour Island, New York (Valcour).

Lingula beltrami Winchell and Schuchert.
Lingula beltrami Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 351, figs. 25a, 25b.
Richmond (Maquoketa): Spring Valley, Minnesota
Holotype.—Cat. No. 45212, U.S.N.M.

Lingula bicarinata Ringueberg.
Lingula bicarinata Ringueberg, Proc. Acad. Nat. Sci. Philadelphia, 1884, p. 149, pl. 3, fig. 8.—Miller, N. A. Geol. Pal., 1889, p. 349.
Clinton (Rochester): Lockport, New York.

LINGULA cf. BILLINGSIANA Matthew. See Lingulella grandis.

Lingula bisulcata Ulrich.
Lingula bisulcata Ulrich, Amer. Geol., 3, 1889, p. 380, fig. 2.
Eden (Economy): Ludlow, Kentucky.
Plastotype.—Cat. No. 44997, U.S.N.M.

Lingula boliviana Hoek.
Lingula boliviana Hoek, Neues Jahrb. Min., Geol. Pal., 34, 1912, p. 244, pl. 8, fig. 3.
Ordovician: Cochabamba, Bolivia

Lingula brainerdi Raymond.
Lingula brainerdi Raymond, Bull. American Pal., 3, 1902, p. 302, pl. 18, figs. 2, 3; Ann. Carnegie Mus., 7, 1911, p. 217, pl. 33, fig. 2.

Lingula brainerdi—Continued.

Lingula limitaris Seely, Rep. Vermont State Geol., n. s., 1, 1902, p. 145 (nom. nud.); ibid., 5, 1906, p. 183, pl. 41; reprint of same, p. 30, pl. 41; ibid., 7, 1910, pl. 51.

Chazyan (Day Point, Crown Point): Valcour Island, Crown Point, New York; South Hero and Isle La Motte, Vermont.

Lingula briseis Billings.

Lingula briseis Billings, Pal. Fossils, 1, Geol. Surv., Canada, 1865, p. 48, fig. 52 (adv. sheets, 1862); Geol. Canada, 1863, p. 161, fig. 136.

Trenton: Near Oliviers Mills on the Bayonne River, Canada.

Lingula(?) canadensis Billings.

Lingula canadensis Billings, Pal. Foss., 1, 1865, p. 114, fig. 95 (adv. sheets, 1862); Geol. Canada, 1863, p. 210, fig. 209.—Davidson, Mon. British Foss. Brach., 5, Sil. Suppl., Pal. Soc., 1883, p. 202, pl. 17, fig. 1.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 27.—Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 352, fig. 26.

Richmond (Charleton): Black Point, Anticosti.

?Trenton (Prosser): Mantorville and Hader, Minnesota.

Lingula cincinnatiensis Hall and Whitfield.

Lingulella (Dignomia) cincinnatiensis Hall and Whitfield, Pal. Ohio, 2, 1875, p. 67, pl. 1, figs. 2, 3.

Lingulella cincinnatiensis Miller, Amer. Pal. Foss., 1877, p. 115; N. A. Geol. Pal., 1889, p. 352, fig. 577.

Lingula cincinnatiensis Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 244.—Foerste, Jour. Cincinnati Soc. Nat. Hist., 21, 1914, p. 127, pl. 2, figs. 2, 3.

Maysville (Fairmount): Cincinnati, Ohio, and vicinity.

Trenton (Upper): Near Rogers Gap; Kentucky.

Lingula clathrata Winchell and Schuchert.

Lingula clathrata Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 345, pl. 29, fig. 42.

Black River (Decorah): St. Paul, Minnesota.

Cotypes.—Cat. No. 45546, U.S.N.M.

Lingula clintoni Vanuxem.

Lingula oblonga Conrad (not Eichwald), 3d Ann. Rep. Geol. Surv. New York, 1839, p. 65.—Hall, Geol. New York, Rep. 4th Dist., 1843, p. 77, fig. 4; Pal. New York, 2, 1852, p. 54, pl. 20, fig. 1.—Rogers, Geol. Pennsylvania, 2, pt. 2, 1858, p. 823, fig. 629; Man. Geol., 1860, p. 107, fig. 4.—Lesley, Rep. Geol. Surv. Pennsylvania, P 4, 1889, figs.

Lingula clintoni Vanuxem, Geol. New York, Rep. 3d Dist., 1842, p. 79, fig. 4.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 197.

Lingula suboblonga D'Orbigny, Prodrome Pal. Stratig., 1850, p. 34.

Early Silurian Cayuga County, New York (Clinton); Pennsylvania; Hamilton, Ontario (Cataract); Arisaig, Nova Scotia.

Lingula clochensis Foerste.

Lingula clochensis Foerste, Bull. Sci. Lab. Denison Univ., 17, 1914, p. 253, pl. 2, fig. 11a, b.

Black River (Lowville): La Cloche peninsula, Ontario.

Lingula cobourgensis Billings.

Lingula cobourgensis Billings, Pal. Fossils, 1, Geol. Surv. Canada, 1865, p. 50, fig. 54 (adv. sheets, 1862); Geol. Canada, 1863, p. 161, fig. 132.—Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 346, pl. 29, fig. 12.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 195, fig. 228a-b.

Trenton: Cobourg, Collingwood, and Ottawa, Canada; ?Minneapolis, Minnesota.

Lingula columba Raymond.

Lingula columba Raymond, Amer. Jour. Sci., 4th ser., 20, 1905, p. 368; Ann. Carnegie Mus., 7, 1911, p. 218, pl. 33, figs. 3, 4.

Chazyan (Day Point, Crown Point, Valcour): Chazy and Valcour Island, New York; Isle La Motte, Vermont.

Lingula covingtonensis Hall and Whitfield.

Lingula covingtonensis Hall and Whitfield, Pal. Ohio, 2, 1875, p. 67, pl. 1, fig. 1.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 8.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 911, pl. 34, fig. 7.—Foerste, Bull. Sci. Lab. Denison Univ., 16, 1910, p. 22, pl. 5, figs. 5, 6.

Trenton: West Covington (Upper part), and Frankfort, Kentucky (Hermitage).

Lingula (Palæoglossa) crassa (Hall).

Lingula crassa Hall, Pal. New York, 1, 1847, p. 98, pl. 30, fig. 8.—Emmons, Amer. Geology, 1, pt. 2., 1855, p. 203, pl. 8, fig. 8.—Hitchcock, Geol. Vermont, 1, 1861, p. 292.

Glossina crassa Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 343, figs.—Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 224.

Trenton: Middleville and Lake Champlain, New York.

Lingula cuneata Conrad.

Lingula cuneata Conrad, 3d Ann. Rep. Geol. Surv. New York, 1839, pp. 63, 64.—Hall, Geol. New York, Rep. 4th Dist., 1843, p. 48, fig. 5; Pal. New York, 2, 1852, p. 8, pl. 4, fig. 2.—Owen, Amer. Jour. Sci. Arts, 48, 1845, p. 300, fig. 5.—Emmons, Man. Geol., 1860, p. 106, fig. 96.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 12, pl.1, figs. 11, 12; pl. 4K, fig. 9.—Grabau, Bull. New York State Mus., 45, 1901, p. 178, fig. 81; Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 178, fig. 81.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 197, fig. 230.

Lingulella cuneata Miller, N. A. Geol. Pal., 1889, p. 352, fig. 578.

Upper Medinan: Medina and Lockport, New York.

Lingula curta Conrad.

Lingula curta Conrad, Jour. Acad. Nat. Sci. Philadelphia, 8, 1842, p. 266, pl. 15, fig. 12.—Hall, Pal. New York, 1, 1847, p. 97, pl. 30, fig. 6.—Emmons, Amer. Geology, 1, pt. 2, 1855, pl. 8, fig. 6.—Rogers, Geol. Pennsylvania, 2, pt. 2, 1858, p. 818, fig. 604.—Billings, Geol. Canada, 1863, p. 161, fig. 138; p. 201, fig. 197.—Emerson, Geol. Frobischer Bay; Nourse's Narr. Hall's Arctic Exped., App., 3, 1879, p. 578.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 343, fig.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 195.

Trenton: East Canada Creek and Middleville, New York; Carlisle, etc., Pennsylvania; Montmorency Falls, Canada; Frobischer Bay, Arctic America.

LINGULA CYANE Billings. See Obolus cyane.

LINGULA DAPHNE Billings. See Lingula (Palæoglossa) trentonensis.

LINGULA DAVISI McCoy. See Lingulella davisi.

LINGULA (GLOSSINA) DEFLECTA Winchell and Schuchert. See Lingula Palæoglossa deflecta.

Lingula (Palæoglossa) deflecta (Winchell and Schuchert).

Lingula (Glossina) deflecta Winchell and Schuchert, Amer. Geol., 9, 1892, p. 284; Geol. Minnesota, 3, 1893, p. 348, pl. 29, figs. 15–18.

Glossina deflecta Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 224.

Trenton (Prosser): Near Fountain, Minnesota.

?Richmond (Maquoketa): Spring Valley, Minnesota.

LINGULA DOLATA Sardeson. See Obolus dolata.

Lingula (Palæoglossa) dubia (D'Orbigny).

Lingula dubia D'Orbigny, Voyage dans l'Amerique Meridionale, 1842, p. 29, pl. 2, fig. 7.

Glossina dubia Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 224 (gen. ref.).

Ordovician: Tacopaya, Bolivia.

Lingula elderi Whitfield.

Lingula elderi Whitfield, American Jour. Sci., 3d ser., 19, 1880, p. 472, figs. 1, 2; Geol. Wisconsin, 4, 1882, p. 345, pl. 27, figs. 1–5.—Chamberlin, ibid., 1, 1883, p. 154, fig.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 11, pl. 1, figs. 21, 22.—Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 339, pl. 29, figs. 1–4.—Huene, Verh. d. Russ.-Kais. Mineral. Ges. zu St. Petersb., 2d ser., 36, 1899, p. 333, fig. 16.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 196, figs. 221, 229c.

Lingula minnesotensis N. H. Winchell, 8th Ann. Rep. Geol. Nat. Hist. Surv. Minnesota, 1880, p. 61.

Black River: Rochester, Minneapolis, etc., Minnesota; Beloit, Wisconsin.

Lingula (Pseudolingula) elegantula (Shaler).

Lingula quadrata Billings (not Eichwald), Canadian Nat. Geol., 1, 1856, p. 319, fig. 8.—Rogers, Geol. Pennsylvania, 2, pt. 2, 1858, p. 820, fig. 615.—Billings, Geol. Canada, 1863, p. 161, fig. 131; Cat. Sil. Foss. Anticosti, 1866, p. 10.

Lingula elegantula Shaler, Bull. Mus. Comp. Zool., 1, 1865, p. 61.

Richmond (English Head) and Gamachian (Ellis Bay): English Head, Charleton Point, etc., Anticosti.

Lingula ellipsiformis Hoek.

Lingula ellipsiformis Hoek, Neues Jahrb. Min., Geol., Pal., 34, 1912, p. 245, pl. 8, fig. 4.

Ordovician: Near Tarabuco, Bolivia.

LINGULA ELLIPTICA Hall. See Lingula subelliptica.

Lingula elliptica Emmons.

Lingula elliptica Emmons (not Philips, 1836), Amer. Geology, pt. 2, 1855, p. 112.—Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 247.

Ordovician shales: Augusta County, Virginia.

Lingula elongata Hall.

Lingula elongata Hall, Pal. New York, 1, 1847, p. 97, pl. 30, fig. 5.—Billings, Geol. Canada, 1863, p. 161, fig. 135.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 202, pl. 8, fig. 5.—Hitchcock, Geol. Vermont, 1, for 1861, 1862, p. 292, fig. 194.—Lesley, Rep. Geol. Surv. Pennsylvania, P 4, 1889, p. 344, fig.—Whiteaves, Pal. Foss., 3, pt. 3, 1897, p. 165.

Trenton: Lewis County New York; Lake Winnipeg, Manitoba; Ottawa, Ontario.

Lingula eva Billings.

Lingula eva Billings, Canadian Nat. Geol., 6, 1861, p. 150; Geol. Canada, 1863, p. 141, fig. 73.—Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 341, pl. 29, figs. 5, 6.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 196, figs. 229i–j.

Black River: Murray Bay, Canada; Fremont, Winona County, Minnesota (Decorah).

Plastotype.—Cat. No. 45547, U.S.N.M.

Lingula forbesi Billings.

Lingula Forbesi Billings, Pal. Fossils, 1, Geol. Surv. Canada, 1865, p. 115, fig. 96 (adv. sheets 1862).

Richmond and Gamachian (English Head–Ellis Bay): English Head, Junction Cliff, etc., Anticosti.

Lingula gibbosa Hall.
Lingula gibbosa Hall, Description n. sp. Foss. Waldron, Indiana, 1879, p. 13; 11th Rep. State Geol. Indiana, 1882, p. 284, pl. 27, fig. 2; Trans. Albany Institute, 10, 1883, p. 69.—Lesley, Rep. Geol. Surv. Pennsylvania, P 4, 1889, p. 344, fig.
Niagaran (Waldron): Waldron, Indiana; Newsom, Tennessee.

Lingula howleyi Matthew.
Lingula howleyi Matthew, Trans. Roy. Soc. Canada, 2d ser., 1, 1896, p. 259, pl. 1, fig. 3.
Lower Ordovician: Kelleys Island, Conception Bay, Newfoundland.
Observation.—Possibly the same as L. murrayi Billings.

Lingula (Palæoglossa) hurlbuti (N. H. Winchell).
Lingula hurlbuti N. H. Winchell, 8th Ann. Rep. Geol. Nat. Hist. Surv. Minnesota, 1880, p. 62.
Lingula (Glossina) hurlbuti Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 347, pl. 29, figs. 13, 14.
Glossina hurlbuti Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 224.
Trenton (Prosser): Mantorville and near Spring Valley, Minnesota.
Plastotype.—Cat. No. 45213, U.S.N.M.

Lingula huronensis Billings.
Lingula Huronensis Billings, Canadian Nat. Geol., 4, 1859, p. 433, fig. 9; Geol. Canada, 1863, p. 124, fig. 48.—Raymond, Ann. Carnegie Mus., 7, 1911, p. 219.
Black River: St. Joseph Island, Lake Huron.

Lingula ingens Spencer.
Lingula ingens Spencer, Bull. Univ. State Missouri, 1884, p. 56; Trans. St. Louis Acad. Sci., 4, 1886, p. 606, pl. 8, fig. 6.
Niagaran dolomite: Hamilton, Ontario.

Lingula inornata Hoek.
Lingula inornata Hoek, Neues Jahrb. Min., Geol., Pal., 34, 1912, p. 244, pl. 8, fig. 2.
Ordovician: Northern Argentina.

Lingula insularis Billings.
Lingula insularis Billings, Cat. Sil. Foss. Anticosti, 1866, p. 40.
Gamachian (Ellis Bay): White Cliff, Gamache Bay, Anticosti.

LINGULA IOLE Billings. See Lingulella iole.

Lingula (Pseudolingula) iowensis (Owen).
Lingula iowensis Owen, Geol. Rep. Iowa, Wisconsin, and Illinois, 1844, p. 70, pl. 15, fig. 1.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 8, pl. 1, fig. 14.—Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 349, pl. 29, figs. 19–22.—Whiteaves, Pal. Foss., 3, pt. 3, 1897, p. 164.—Huene, Verh. d. Russ.-Kais. Mineral. Ges. zu St. Petersb., 2d ser., 36, 1899, p. 337, fig. 17.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 196, fig. 229f-h.
Lingula quadrata? Owen (not Eichwald), Geol. Rep. Wisconsin, Iowa, and Minnesota, 1851, pl. 2B, fig. 8.
Lingula quadrata Hall, Geol. Wisconsin, 1, 1862, p. 46, fig. 1, and p. 435.—Meek and Worthen, Geol. Surv. Illinois, 3, 1868, p. 305, pl. 2, fig. 4.
Lingulella iowensis Whitfield, Geol. Wisconsin, 4, 1882, p. 242, pl. 9, fig. 1.
Trenton (Prosser-Galena): Wisconsin; Iowa; Minnesota; Illinois; Lake Winnipeg, Manitoba.
Plastotype and *plesiotype.*—Cat. Nos. 17873, 44995, U.S.N.M.

LINGULA IRENE Billings. See Lingulella irene.

LINGULA IRIS Billings. See Lingulella iris.

Lingula kingstonensis Billings.

Lingula Kingstonensis Billings, Geol. Surv. Canada, Pal. Fossils, 1, 1865, p. 48, fig. 51 (adv. sheets, 1862); Geol. Canada, 1863, p. 141, fig. 74.

Black River: Long Island, near Kingston, Canada.

LINGULA LAMELLATA Hall (part). See Lingula tæniola.

Lingula lamellata Hall.

Lingula lamellata Hall, Geol. New York; Rep. 4th Dist., 1843, p. 108, fig. 2; Pal. New York, 2, 1852, p. 249, pl. 53, figs. 1, 2 (not p. 55, pl. 20, fig. 4=L. tæniola).—Lesley, Rep. Geol. Surv. Pennsylvania, P 4, 1889, p. 344, fig.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 16, pl. 1, figs. 9, 10; pl. 4K, figs. 10-13.—Crane, Geol. Mag., dec. 4, 1895, 2, pl. 5, fig. 5.

Clinton (Rochester): Lockport and Rochester, New York; Hamilton, Ontario.

LINGULA LENS Matthew. See Lingulella lens.

LINGULA LIMITARIS Seely. See Lingula brainerdi.

Lingula lineata Hoek.

Lingula lineata Hoek, Neues Jahrb. Min., Geol. Pal., 34, 1912, p. 244, pl. 8, fig. 1.

Ordovician: Near Tarabuco, Bolivia.

Lingula lingulata Hall and Clarke.

Lingula lingulata Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 173, pl. 4K, fig. 5; 48th Rep. New York State Mus., 2, for 1895, 1897, p. 327, pl. 1, fig. 2; 14th Rep. State Geol. New York for 1894, 1897, p. 327, pl. 1, fig. 2.

Upper Medinan (Cataract): Hamilton, Ontario.

Lingula lyelli Billings.

Lingula Lyelli Billings, Canadian Nat. Geol., 4, 1859, p. 348, fig. 1, p. 431; Geol. Canada, 1863, p. 124, fig. 49.—Chapman, Canadian Jour., n. s., 8, 1863, p. 195, fig. 165c; Expos. Min. Geol. Canada, 1864, p. 167, fig. 165c.—Raymond, Ann. Carnegie Mus., 7, 1911, p. 218, 33, figs. 5, 6.

Chazyan (Aylmer): Allumette Island, Aylmer and Hog Back, near Ottawa, Canada.

Lingula mantelli Billings.

Lingula mantelli Billings, Canadian Nat. Geol., 4, 1859, p. 349, figs. 1e-1f; Geol. Canada, 1863, p. 113, fig. 20.

Canadian (Beekmantown): St. Eustache, Canada.

LINGULA? MANTICULA White. See Lingulella manticula.

LINGULA MARGINATA D'Orbigny. See Lingula submarginata.

Lingula minima americana Williams.

Lingula minima var. americana Williams, Proc. U. S. Nat. Mus., 45, 1913, p. 340, pl. 31, fig. 6.

Silurian (Pembroke): Sipp's Bay, Washington County, Maine.

Holotype.—Cat. No. 58973, U.S.N.M.

LINGULA MINNESOTENSIS N. H. Winchell. See Lingula elderi.

Lingula modesta Ulrich.
Lingula modesta Ulrich, Amer. Geol., 3, 1889, p. 382, fig. 4 on p. 378.—Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 344, pl. 29, fig. 41.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 196, fig. 229e.—Foerste, Bull. Sci. Lab. Denison Univ., 16, 1910, p. 22, pl. 2, fig. 17.
Lingula vanhorni Hall and Clarke (not Miller), Pal. New York, 8, pt. 1, 1892, pl. 1, fig. 4.
Trenton: Frankfort (Hermitage) and Covington, Kentucky (upper part).

Lingula morsei (N. H. Winchell).
Lingulepis morsensis N. H. Winchell, 4th Ann. Rep. Geol. Nat. Hist. Surv. Minnesota, 1876, p. 41, fig. 6.—James, Jour. Cincinnati Soc. Nat. Hist., 17, 1895, p. 132.
Lingulepis morsii Miller, N. A. Geol. Pal., 1889, p. 352.
Lingula morsii Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 62.—Sardeson, Bull. Minnesota Acad. Nat. Sci., 4, 1896, p. 77, pl. 4, figs. 2, 3.
Black River (Basal Platteville): Near Fountain, Minnesota.

LINGULA MOSIA Hall. See Lingulella mosia.

Lingula münsteri D'Orbigny.
Lingula müsterii D'Orbigny, Voyage dans l'Amérique Méridionale, Pal., 1842, p. 29, pl. 2, fig. 6.
Lingula münsteri A. Ulrich, Neues Jahrb. Mineral., Beilageband, 8, 1892, p. 7.—Hoek, Neues Jahrb. Min., Geol. Pal., 34, 1912, p. 243, pl. 8, figs. 6–8.
Ordovician: Tacopaya, etc., Bolivia.

Lingula? murrayi Billings.
Lingula murrayi Billings, Canadian Nat. Geol., n. s., 6, 1872, p. 467, fig. 3; Pal. Foss., 2, 1874, p. 66, fig. 34.
Upper Cambrian or Lower Ordovician: Bell Island, Conception Bay, Newfoundland.
Observation.—See Lingula howleyi Matthew.

LINGULA NORWOODI James. See Lingulops norwoodi.

Lingula nympha Billings.
Lingula nympha Billings, Pal. Fossils, 1, Geol. Surv. Canada, 1865, p. 214, fig. 198.—Ami, Ottawa Nat., 8, 1894, p. 85.
Chazyan (Quebec-N): Table Head, Newfoundland.

Lingula oblata Hall.
Lingula oblata Hall, Geol. New York; Rep. 4th Dist., 1843, p. 77, fig. 8 on p. 76; Pal. New York, 2, 1852, p. 54, pl. 20, fig. 2.—Owen, Amer. Jour. Sci. Arts, 48, p. 306, fig. 8.—Lesley, Rep. Geol. Surv. Pennsylvania, P 4, 1889, p. 346, fig.
Early Silurian: Sodus and Wolcott, New York (Clinton); Ontario (Cataract).

LINGULA OBLONGA Conrad. See Lingula clintoni.

Lingula obtusa Hall.
Lingula obtusa Hall, Pal. New York, 1, 1847, p. 98, pl. 30, fig. 7.—Billings, Geol. Canada, 1863, p. 161, fig. 137.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 202, pl. 8, fig. 7.—Hitchcock, Geol. Vermont, 1, for 1861, 1862, p. 292, fig. 195.—Chapman, Canadian Jour., n. s., 8, 1863, p. 203, fig. 199; Expos. Min. and Geol. Canada, 1864, p. 175, fig. 199.—Davidson, Mon. British Sil. Brach. Pal. Soc., 1866, p. 52, pl. 3, fig. 31.—Lesley, Rep. Geol. Surv. Pennsylvania, P 4, 1889, p. 346, figs.—Whiteaves, Pal. Foss., 3, pt. 3, 1897, p. 165.
Trenton: Middleville, New York; Lake Winnipeg and Ottawa, Canada.

Lingula? ovata Cleland.
Lingula(?) ovata Cleland, Bull. Amer. Pal., 4, 1903, p. 19, pl. 4, fig. 3.
Canadian (Tribes Hill): Fort Hunter, Tribes Hill, etc., New York.

Lingula papillosa Emmons.
Lingula papillosa Emmons, Amer. Geology, pt. 2, 1855, p. 202, fig. 64; Manual Geol., 1860, p. 99, fig.—Lesley, Rep. Geol. Surv. Pennsylvania, P 4, p. 346, figs.
Trenton: ?New York.

Lingula (Palæoglossa) perovata (Hall).
Lingula perovata Hall, Pal. New York, 2, 1852, p. 55, pl. 20, fig. 3.
Glossina perovata Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 224.
Clinton: Rochester, New York.

LINGULA PERPLEXA Hall. See Lingula subelliptica.

Lingula perryi Billings.
Lingula perryi Billings, Pal. Fossils, 1, Geol. Surv. Canada, 1865, p. 20, fig. 23 (adv. sheets, 1862); Geol. Vermont, 2, 1861, p. 957, fig. 363; Geol. Canada, 1863, p. 274, fig. 278.
Black River(?): Highgate Spring, Vermont.

Lingula philomela Billings.
Lingula Philomela Billings, Pal. Fossils, 1, Geol. Surv. Canada, 1865, p. 49, fig. 53 (adv. sheets, 1862); Geol. Canada, 1863, p. 161, fig. 133.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pl. 1, fig. 8.—Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 342, pl. 29, figs. 7, 8.—Weller, Geol. Surv. New Jersey, Pal., 3, 1903, p. 145, pl. 9, fig. 7.
Trenton: Montmorency Falls, Ottawa, etc., Canada; near Beaver Run, New Jersey.
?Richmond (Maquoketa): Near Granger and Wykoff, Minnesota.
Plastotype.—Cat. No. 45211, U.S.N.M.

LINGULA PINNAFORMIS Owen. See Lingulella (Lingulepis) acuminata.

LINGULA PRIMA Rogers. See Obolus (Westonia) rogersi.

LINGULA PRIMA Billings. See Lingulella (Lingulepis) acuminata.

LINGULA PRIMA Hall. See Lingulella prima.

Lingula procteri Ulrich.
Lingula procteri Ulrich, Amer. Geol., 3, 1889, p. 377, fig. 1.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 12, pl. 1, figs. 5–7.
Lingula cf. procteri Foerste, Jour. Cincinnati Soc. Nat. Hist., 21, 1914, p. 129, pl. 2, fig. 7.
Trenton (upper): Covington, Rogers Gap, etc., Kentucky.

Lingula procteri versaillesensis Foerste.
Lingula procteri versaillesensis Foerste, Bull. Sci. Lab. Denison Univ., 17, 1912, p. 135, pl. 10, figs. 8a, b.
Trenton (Flanagan): Versailles, Kentucky.

Lingula progne Billings.
Lingula progne Billings, Pal. Fossils, 1, Geol. Surv. Canada, 1865, p. 47, fig. 50 (adv. sheets, 1862); Geol. Canada, 1863, p. 161, fig. 134; p. 201, fig. 196.
Trenton (Collingwood): Montreal, Collingwood, Ottawa, etc., Canada.

LINGULA QUADRATA Billings. See Lingula (Pseudolingula) elegantula.

LINGULA QUADRATA Hall. See Lingula (Pseudolingula) rectilateralis.

LINGULA QUADRATA? Owen. See Lingula iowensis.

Lingula quebecensis Billings.

Lingula quebecensis Billings, Pal. Fossils, 1, Geol. Surv. Canada, 1865, p. 72, fig. 65; pp. 72, 216 (adv. sheets, 1862); Geol. Canada, 1863, p. 230, fig. 241.—Chapman, Canadian Jour., n. s., 8, 1863, p. 191, fig. 160c; Expos. Min. Geol. Canada, 1864, p. 163, fig. 160c.

Canadian: Point Levis, Sillery, etc., Canada (Levis, Phyllograptus typus and Diplograptus dentatus zones); Cow Head, Newfoundland (Quebec-P).

Lingula (Pseudolingula) rectilateralis (Emmons).

Lingula rectilateralis Emmons, Geol. New York, Rep. 2d Dist., 1842, p. 399, fig. 6.—Lesley, Rep. Geol. Surv. Pennsylvania, P 4, 1889, p. 347, figs.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 195, fig. 228c.—Ruedemann, Bull. New York State Mus., 162, 1912, p. 91, pl. 4, fig. 1.—Foerste, Bull. Sci. Lab. Denison Univ., 17, 1914, p. 254.

Lingula quadrata Hall (not Eichwald), Pal. New York, 1, 1847, p. 96, pl. 30, fig. 4; p. 285, pl. 79, fig. 1.—Miller, Cincinnati Quart. Jour. Sci., 2, 1875, p. 9.

Utica: Rodman, Lorraine, etc., New York.

Lingula riciniformis Hall.

Lingula riciniformis Hall, Pal. New York, 1, 1847, p. 95, pl. 30, fig. 2.—Emmons, Amer. Geology, 1, pt. 2, 1885, p. 203, pl. 8, figs. 2a–c.—Lesley, Rep. Geol. Surv. Pennsylvania, P 4, 1889, p. 347, figs.—Beecher, Amer. Jour. Sci., 3d ser., 44, 1892, p. 149.—Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 343, fig. 24; pl. 29, fig. 9.—Crane, Geol. Mag., dec. 4, 1895, 2, pl. 5, fig. 7.—Weller, Geol. Surv. New Jersey, Pal., 3, 1903, p. 144, pl. 9, fig. 8.

Lingula (Glossina) riciniformis Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pl. 1, fig. 3.

Trenton: Middleville, New York; Charlesbourg, Canada; St. Paul, Minnesota; Jacksonburg, New Jersey.

Lingula riciniformis galenensis Winchell and Schuchert.

Lingula riciniformis var. galenensis Winchell and Schuchert, Amer. Geol., 9, 1892, p. 284; Geol. Minnesota, 3, 1893, p. 344, pl. 29, figs. 10, 11.

Trenton (Prosser): Near Kenyon and Fountain, Minnesota; Neenah and Oshkosh, Wisconsin.

Lingula scobina Williams.

Lingula scobina Williams, Proc. U. S. Nat. Nat. Mus., 45, 1913, p. 339, pl. 30, fig. 18.

Silurian (Pembroke): Leighton Cove, Washington County, Maine.

Holotype.—Cat. No. 58967, U.S.N.M.

Lingula selwyni Whiteaves.

Lingula Selwyni Whiteaves, Geol. Surv. Canada, Rep. Progr. for 1875-76, 1877, p. 103.

Horizon unknown: Peace River, British Columbia.

Lingula striata Emmons.

Lingula striata Emmons, Amer. Geology, pt. 2, 1855, p. 112, pl. 1, fig. 17; Manual Geol., 1860, p. 88, fig. 74.—Lesley, Rep. Geol. Surv. Pennsylvania, P 4, 1889, p. 348, figs.—Schuchert, Bull. U. S. Geol. Surv., 87, p. 254.

Ordovician (Lower Martinsburg): Augusta County, Virginia.

Lingula subelliptica D'Orbigny.
Lingula elliptica Hall (not Phillips), Geol. New York, Rep. 4th Dist., 1843, p. 76, fig. 7.—Owen, Amer. Jour. Sci. Arts, 48, 1845, p. 306, fig. 7.
Lingula subelliptica D'Orbigny, Prodrome Pal., 1, 1850, p. 34.
Lingula perplexa Hall, Miller's Amer. Pal. Fossils, 1877, p. 244.—Lesley, Rep. Geol. Surv. Pennsylvania, P 4, 1889, p. 346, fig.
Clinton: Walcott, New York.

Lingula submarginata D'Orbigny.
Lingula marginata D'Orbigny, Voyage dans l'Amerique Meridionale, 3, pt. 4, Pal., 1842, p. 28, pl. 2, fig. 5; 8, Atlas, 1847.
Lingula submarginata, D'Orbigny, Prodrome Pal., 1, 1850, p. 14.
Ordovician: Tacopaya, Bolivia.

LINGULA SUBOBLONGA D'Orbigny. See Lingula clintoni.

Lingula tæniola Hall and Clarke.
Lingula lamellata Hall (part), Pal. New York, 2, 1852, p. 55, pl. 20, fig. 4.
Lingula tæniola Hall and Clarke, ibid., 8, pt. 1, 1892, pp. 18, 173, pl. 4K, fig. 8; 48th Rep. New York State Mus., 2, for 1895, 1897, p. 327, pl. 1, fig. 4; 14th Rep. State Geol. New York for 1894, 1897, p. 327, pl. 1, fig. 4.
Clinton: Clinton, New York; Hamilton, Ontario.

LINGULA (GLOSSINA) TRENTONENSIS Grabau and Shimer. See Lingula (Palæoglossa) trentonensis.

Lingula (Palæoglossa) trentonensis (Conrad).
Lingula trentonensis Conrad, Jour. Acad. Nat. Sci. Philadelphia, 8, 1842, p. 266, pl. 15, fig. 11.—Vanuxem, Geol. New York; Rep. 3d Dist., 1842, p. 48.
Lingula attenuata? Hall (not Sowerby), Pal. New York, 1, 1847, p. 94, pl. 30, fig. 1.
Lingula daphne Billings, Pal. Fossils, 1, Geol. Surv. Canada, 1865, p. 50 (adv. sheets 1862).
?Lingula attenuata A. Ulrich, N. Jahrb. f. Mineral, Beilageband, 8, 1892, p. 7, pl. 1, fig. 3.
Lingula (Glossina) trentonensis Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 195.
Glossina trentonensis Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 225.
Trenton: Glens Falls, Trenton Falls, Middleville, New York; Wisconsin; Montreal and Ottawa, Canada; ?near Vacas, Bolivia.

LINGULA VANHORNI Hall and Clarke. See Lingula modesta.

Lingula vanhorni Miller.
Lingula vanhorni Miller, Cincinnati Quart. Jour. Sci., 2, 1875, p. 9, fig. 1; 18th Rep. Geol. Surv. Indiana, 1894, p. 309.—Foerste, Amer. Geol., 31, 1903, p. 340 (loc. occ.).
Richmond: Versailles, Indiana.

Lingula waynesboroensis Foerste.
Lingula waynesboroensis Foerste, Bull. Sci. Lab. Denison Univ., 14, 1910, p. 23, pl. 2, fig. 18; pl. 5, fig. 7.
Trenton (Hermitage): Near Waynesboro, and Clifton, Tennessee.

Lingula whitfieldi Ulrich.
Lingula whitfieldi Ulrich, Amer. Geol., 3, 1889, p. 381, fig. 3.—Foerste, Jour. Cincinnati Soc. Nat. Hist., 21, 1914, p. 128, pl. 2, fig. 8.
Trenton (Upper): Covington, Rogers Gap, etc., Kentucky.
Plastotype.—Cat. No. 44996, U.S.N.M.

LINGULASMA Ulrich. Genotype: L. schucherti Ulrich.

Lingulasma Ulrich, Amer. Geol., 3, 1889, p. 383.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pp. 24, 46, 163.—Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 353.—Hall and Clarke, 11th Ann. Rep. New York State Geol., 1894, p. 335.—Schuchert, Zittel-Eastman Textb. Pal., 1, 1900, p. 308; 2d ed., 1913, p. 374.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 198.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 891.

Lingulelasma Miller, N. A. Geol. Pal., 1889, p. 351.

Lingulasma galenense Winchell and Schuchert.

Lingulasma galenensis Winchell and Schuchert, Amer. Geol., 9, 1892, p. 285; Geol. Minnesota, 3, 1893, p. 354, pl. 30, figs. 1-4.—Weller, Geol. Surv. New Jersey, Pal., 3, p. 145, pl. 9, figs. 10-11.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 199, fig. 233.

Trenton: Fillmore and Goodhue Counties, Minnesota; Decorah, Iowa; Neenah and Oshkosh, Wisconsin; near Newton, New Jersey.

Plastotypes.—Cat. No. 45195, U.S.N.M.

Lingulasma schucherti Ulrich.

Lingulasma schucherti Ulrich, Amer. Geol., 3, 1889, p. 389, fig. 5.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 24, pl. 2, figs. 17-23.

Lingulelasma schucherti Miller, N. A. Geol. Pal., 1889, p. 351.

Richmond: Wilmington (Fernvale) and Savannah (Maquoketa), Illinois.

Plastotype.—Cat. No. 45194, U.S.N.M.

LINGULELASMA SCHUCHERTI Miller. See Lingulasma schucherti.

LINGULELLA Salter. Genotype: Lingula davisi McCoy.

Lingulella Salter, Mem. Geol. Surv. Great Britain, 3, 1866, p. 333.—Davidson, Mon. British Sil. Brach., Pal. Soc., 1866, p. 55.—Dall, Amer. Jour. Conch., 6, 1870, pp. 153, 159.—Zittel, Handb. Pal., 1, 1880, p. 663.—Miller, N. A. Geol. Pal., 1889, p. 352.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pp. 55, 163; 11th Ann. Rep. New York State Geol., 1894, p. 232.—Walcott, Proc. U. S. Nat. Mus., 21, 1898, pp. 390-394, pl. 27, figs. 1-5; 23, 1901, p. 683.—Schuchert, Zittel-Eastman Textb. Pal., 1, 1900, p. 307; 2d ed., 1913, p. 372.—Matthews, Trans. Roy. Soc. Canada, 2d ser., 8, sec., 4, 1910, p. 103; Geol. Surv. Canada, Rep. Cambrian Rocks Cape Breton, 1903, p. 116.—Walcott, Smiths. Misc. Coll., 53, 1908, pp. 142, 144; Mon. U. S. Geol. Surv., 51, 1912, p. 469.

Lingulepis Hall, 16th Ann. Rep. New York State Cab. Nat. Hist., 1863, p. 129.—Meek and Hayden, Smiths. Contr. Knowl., 172, Pal. Upper Missouri, pt. 1, 1865, pp. 1, 2.—Hall, Trans. Albany Inst., 5, 1867, p. 106.—Dall, Amer. Jour. Conch., 2d ser., 6, pt. 2, 1870, pp. 154-161.—Meek, Proc. Acad. Nat. Sci. Philadelphia, 23, 1871, pp. 186-187.—Zittel, Handb. Pal., 1, Abth. 1, 1880, p. 664.—Hall and Clarke, 11th Ann. Rep. State Geol. New York, 1892, pp. 231-232; 45th Ann. Rep. New York State Mus., 1892, pp. 547-548; Pal. New York, 8, pt. 1, 1892, pp. 59-62, 164.—Matthews, Trans. Roy. Soc. Canada, 1902, 2d ser., 8, sec. 4, No. 3, p. 102; Geol. Surv. Canada, Rep. Cambrian Rocks Cape Breton, 1903, p. 126.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 193. (Genotype Lingula acuminata Conrad.)

Lingulella (Lingulepis) Walcott, Smiths. Misc. Coll., 53, pl. 11, pp. 142, 144; Mon. U. S. Geol. Surv., 51, 1912, p. 544.

Obolus (Lingulepis) Walcott, Mon. U. S. Geol. Surv., 32, pt. 2, 1899, pp. 443-444; Proc. U. S. Nat. Mus., 23, 1901, p. 683.

Lingulella (Lingulepis) acuminata (Conrad).

Lingula acuminata Conrad, 3d Ann. Rep. New York Geol. Surv., 1839, p. 64.—Hall, Pal. New York, 1, 1847, p. 9, fig.

Lingula prima Billings, Canadian Nat., 1st ser., 1, 1856, p. 34, fig. 1.

Lingula antiqua Hall, Pal. New York, 1, 1847, pp. 3, 4, pl. 1, figs. 3a–e.—Emmons, Manual Geology, 2d ed., 1863, p. 92, fig. 77.

Lingulepis acuminata Matthew, Trans. Roy. Soc. Canada, 2d ser., 1, sec. 4, No. 13, 1895, pp. 257–258, pl. 2, figs. 5a–b.

Obolus (Lingulepis) acuminatus Walcott, Mon. U. S. Geol. Surv., 32, pt. 2, 1899, p. 443.

Lingula pinnaformis Owen, Rep. Geol. Surv. Wisconsin, Iowa, Minnesota, 1852, p. 583, pl. Lb, figs. 4, 6, 8.

Lingulepis pinnaformis Whitfield, U. S. Geogr. and Geol. Surv. Rocky Mts. region, Rep. Geol. Res. Black Hills of Dakota, 1880, p. 335, pl. 2, figs. 1–4; Geol. Wisconsin, 4, 1882, pp. 169–170, pl. 1, figs. 2, 3.

Lingulepis pinniformis Hall and Clarke, 11th Ann. Rep. State Geol. New York, 1892, figs. 237, 238, p. 232; pl. 1, figs. 16, 17.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 193, fig. 227.

Lingulella (Lingulepis) acuminata Walcott, Mon. U. S. Geol. Surv., 51, 1912, p. 545, pls. 34, 40–42 (see for complete bibliography); Smiths. Misc. Coll., 57, 1912, p. 262, pl. 42, figs. 1–7.

Middle Cambrian–Lower Ordovician: Chateaugay Falls, Franklin County, etc., New York; Vermont; Ontario; Virginia; Tennessee; Wisconsin; Minnesota; etc.

Plesiotypes.—Cat. Nos. 52469, 51878, 17999, U.S.N.M.

Lingulella (Lingulepis) acuminata sequens Walcott.

Glossina acuminata Hall and Clarke (not Conrad), 11th Ann. Rep. State Geol. New York for 1891, 1892, pl. 1, figs. 10, 11.

Lingula (Glossina) acuminata Hall and Clarke (not Conrad), Pal. New York, 8, pt. 1, 1892, pl. 1, figs. 1, 2.

Lingulella (Lingulepis) acuminata sequens Walcott, Smiths. Misc. Coll., 53, 1908, p. 72, pl. 8, fig. 4; Mon. U. S. Geol. Surv., 51, 1912, p. 551, figs. 46A, B.

Canadian (Beekmantown): Near Ticonderoga, Essex County, New York.

Holotype and *plesiotype.*—Cat. No. 53675, U.S.N.M.

LINGULELLA? AFFINIS Billings. See Obolus (Lingulobolus) affinis.

Lingulella? allani Walcott.

Lingulella? allani Walcott, Smiths. Misc. Coll., 57, 1912, p. 232, pl. 35, figs. 7–9.

Lower Ordovician (Goodsir): Moose Creek Valley, Mount Mollison, Ice River Valley, etc., British Columbia.

Lingulella bella (Walcott).

Obolus (Lingulella) bellus Walcott, Proc. U. S. Nat. Mus., 21, 1898, pp. 397–398; ibid., 23, 1901, pp. 685–687.—Matthew, Geol. Surv. Canada, Rep. Cambrian Rocks Cape Breton, 1903, p. 204.

Lingulella bella Walcott, Mon. U. S. Geol. Surv., 51, 1912, p. 481, pl. 19, figs. 2, 2a–q; pl. 36, fig. 4.

Upper Cambrian and Lower Ordivician: Near Lance Cove, Great Belle Island, Conception Bay, Newfoundland.

Holotype and *paratypes.*—Cat. No. 27308, U.S.N.M.

LINGULELLA? BILLINGSANA Schuchert. See Lingulella grandis.

LINGULELLA (DIGNOMIA) CINCINNATIENSIS Hall and Whitfield. See Lingula cincinnatiensis.

Lingulella concinna Matthew.

Lingulella concinna Matthew, Bull. Nat. Hist. Soc. New Brunswick, 4, pt. 4, No. 19, 1901, pp. 273–274, pl. 5, figs. 2a–b.—Walcott, Mon. U. S. Geol. Surv., 51, 1912, p. 486, pl. 33, figs. 2a–h; pl. 34, figs. 1a–r.

Obolus (Lingulella) bellus Walcott, Proc. U. S. Nat. Mus., 23, 1901, p. 685.

Obolus (Linguella) concinnus Walcott, Proc. U. S. Nat. Mus., 25, pp. 608, 609.

Lingulella concinna Matthew, Geol. Surv. Canada, Rep. Cambrian Rocks Cape Breton, 1903, pp. 203–204, pl. 14, figs. 5a, b.

Canadian (Bretonian—Div. C3c): McNeil Brook, Barachois Glen, etc., Cape Breton, Nova Scotia.

LINGULELLA CUNEATA Matthew. See Lingulella grandis.

Lingulella davisi (McCoy).

Lingula davisi McCoy, Quart. Jour. Geol. Soc. London, 8, 1851, pp. 405–406; British Pal. Foss., 1854, p. 252, pl. 2, figs. 7a–b.

Lingulella davisii Davidson, Brit. Foss. Brach., 3, pt. 7, No. 1, 1866, pp. 56, 57, pl. 4, figs. 1–16.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pp. 56, 57, fig. 18.—Hoek, Neues Jahrb. Geol., Min. Pal., 34, 1912, p. 219.

Lingulella cf. davisii Matthew, Geol. Surv. Canada, Rep. Cambrian Rocks Cape Breton, 1903, p. 203; Bull. Nat. Hist. Soc. New Brunswick, 4, pt. 5, No. 20, 1902, pp. 407, 408.

Lingulella davisi Walcott, Mon. U. S. Geol. Surv., 51, 1912, p. 489, pl. 30, figs. 2, 2a; pl. 31, figs. 6a–h. (See for complete bibliography.)

Ordovician (Coniston—Bala): Coniston, Lancashire, England. Upper and lower Lingula flags of North Wales.

Canadian: McLeod Brook, near Boisdale, Cape Breton, Nova Scotia (Bretonian—Div. C3c2); Bolivia.

Plesiotypes.—Cat. Nos. 35239, 51740, U.S.N.M.

Lingulella desiderata (Walcott).

Obolus (Lingulella) desiderata Walcott, Proc. U. S. Nat. Mus., 21, 1898, pp. 399, 400; Mon. U. S. Geol. Surv., 32, pt. 2, pp. 445, 446, pl. 40, fig. 2 (not 2a).

Lingulella desiderata Walcott, Mon. U. S. Geol. Surv., 51, 1912, p. 492, pl. 20, figs. 4a–c, 5, 5a.

Lower Ordovician: Near Colorado Springs, El Paso County, Ouray County, etc., Colorado. Also Upper and Middle Cambrian of Montana, etc.

Holotype and *plesiotypes*.—Cat. Nos. 27355, 33867, etc., U.S.N.M.

Lingulella ellsi (Walcott).

Obolus (Lingulella) ellsi Walcott, Proc. U. S. Nat. Mus., 21, 1898, p. 402.

Lingulella ellsi Walcott, Mon. U. S. Geol. Surv., 51, 1912, p. 495, pl. 19, figs. 3, 3a–c.

Canadian ("Upper Sillery"): Chaudiere River at Grand Trunk Railroad bridge, Quebec.

Holotype and *paratypes*.—Cat. No. 27315, U.S.N.M.

LINGULELLA(?) ESCASONI Matthew. See Obolus (Westonia) escasoni.

Lingulella (Lingulepis) exigua (Matthew).

Obolus (Lingulepis) gregwa Walcott (in part) (not Matthew), Proc. U. S. Nat. Mus., 23, 1901, pp. 692–694.

Lingulepis starri var. Matthew, Geol. Surv. Canada, Rep. Cambrian Rocks Cape Breton, 1903, pp. 193–197, pl. 14, figs. 2a–c.

Lingulepis starri exigua Matthew, ibid., 1903, pp. 197, 198, pl. 14, figs. 3a–d.

Lingulella (Lingulepis) exigua—Continued.

Lingulella (Lingulepis) exigua Walcott, Mon. U. S. Geol. Surv., 51, 1912, p. 551, pl. 33, figs. 4, 4a; pl. 43, figs. 1-1z.

Canadian (Bretonian—Div. C3b): Salmon River, thirteen miles south of Marion Bridge, Cape Breton, Nova Scotia.

Lingulella ferruginea Salter.

Lingulella ferruginea Salter, Quart. Jour. Geol. Soc. London, 23, pt. 1, 1867, p. 340, fig. 1.—Davidson, Geol. Mag., 5, 1868, pp. 306-307, pl. 15, figs. 1-8; British Foss. Brach., 3, pt. 7, No. 4, 1871, pp. 336-337, pl. 49, figs. 32-35.—Matthew, Geol. Surv. Canada, Rep. Cambrian Rocks Cape Breton, 1903, p. 108.—Walcott, Mon. U. S. Geol. Surv., 51, 1912, p. 496, pl. 29, figs. 1a-w, 2a-f; pl. 30, fig. 1; pl. 31, figs. 3a-c; pl. 35, figs. 4a-b. (See for complete bibliography.)

Obolella? gemmula Matthew, Trans. Roy. Soc. Canada, 9, sec. 4, 1892, pp. 41-42, pl. 12, figs. 8a-c.

Leptobolus gemmulus Matthew, Geol. Surv. Canada, Rep. Cambrian Rocks Cape Breton, 1903, pp. 190-192, pl. 14, figs. 1a-c.

Middle and Upper Cambrian of Wales, Norway, Denmark, etc.

Canadian (Bretonian—Div. C3c): Navy Island, St. John Harbor, New Brunswick, and McLeod Brook, near Boisdale, Cape Breton, Nova Scotia.

Lingulella grandis (Matthew).

Leptobolus grandis Matthew, Trans. Roy. Soc. Canada, 1st ser., 11, sec. 4, 1894, pp. 91-92, pl. 16, figs. 7a-c.

Lingulella cuneata Matthew, ibid., 1st ser., 11, sec. 4, 1894, pp. 92-93, pl. 16, figs. 5a-b.

Lingula cf. billingsiana Matthew, ibid., 1st ser., 11, sec. 4, 1894, p. 93, pl. 16, figs. 6a-b.

Lingulella? billingsana Schuchert (not Whiteaves), Bull. U. S. Geol. Surv., 87, 1897, p. 256.

Lingulella grandis Walcott, Mon. U. S. Geol. Surv., 51, 1912, p. 502, pl. 38, figs. 2, 2a-f.

Canadian (Bretonian—Div. C3c): Hardingville, St. John County, New Brunswick.

Lingulella iole (Billings).

Lingula Iole Billings, Pal. Geol. Surv. Canada, Fossils, 1, 1865, p. 215, fig. 199.

Lingulella iole Walcott, Mon. U. S. Geol. Surv., 51, 1912, p. 508, pl. 27, figs. 5, 5a.

Chazyan (Quebec—P): Four miles northeast of Portland Creek, Newfoundland.

LINGULELLA IOWENSIS Whilfield. See Lingula iowensis.

Lingulella irene (Billings).

Lingula irene Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 71, fig. 64 (adv. sheets, 1862); Geol. Canada, 1863, p. 230, fig. 240.

Lingulella irene Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 257.—Walcott, Mon. U. S. Geol. Surv., 51, 1912, p. 508, pl. 27, fig. 6, 6a.

Canadian (Levis, Didymograptus and Diplograptus dentatus zones): Point Levis, Quebec.

Lingulella iris (Billings).

Lingula iris Billings, Pal. Fossils, 1, Geol. Surv. Canada, 1865, p. 301, fig. 290.

Lingulella iris Walcott, Mon. U. S. Geol. Surv., 51, 1912, p. 509, pl. 27, fig. 2.

Ozarkian? (Levis-erratic): Point Levis, Quebec.

Lingulella lævis Matthew.

Lingulella lævis Matthew, Trans. Roy. Soc. Canada, 9, 1892, p. 39, pl. 12, figs. 4a, 4b.—Walcott, Mon. U. S. Geol. Surv., 51, 1912, p. 512, pl. 19, figs. 4, 4a, b.

Canadian (Bretonian—Div. C3a): St. John Harbor, St. John, New Brunswick.

Lingulella lævis grandis Matthew.

Lingulella lævis grandis Matthew, Geol. Surv. Canada, Rep. Cambrian Rocks, Cape Breton, 1903, pp. 200–201, pl. 15, figs. 1a–d.—Walcott, Mon. U. S. Geol. Surv., 51, 1912, p. 512, pl. 19, fig. 4c.

Canadian (Bretonian—Div. C3a): Escasonie Shore, East Bay, Cape Breton, Nova Scotia and St. John, New Brunswick.

LINGULELLA LÆVIS LENS Matthew. See Lingulella lens.

Lingulella lens (Matthew).

Lingula? lens Matthew, Bull. Nat. Hist. Soc. New Brunswick, 4, pt. 4, 1901, pp. 274–275, pl. 5, figs. 3a–h.

Obolus (Lingulella) bellus Walcott, (part), Proc. U. S. Nat. Mus., 23, 1901, pp. 685–687.

Obolus (Lingulella) lens Walcott, ibid., 25, 1902, pp. 606–607.

Lingulella lævis lens Matthew, Geol. Surv. Canada, Rep. Cambrian Rocks Cape Breton, 1903, pp. 201–203, pl. 15, figs. 3a–h.

Lingulella lens Matthew, ibid., 1903, pp. 205–206.—Walcott, Mon. U. S. Geol. Surv., 51, 1912, p. 512, pl. 33, figs. 1a–d.

Canadian (Bretonian—Div. C3a?): McAdam Shore, East Bay, Cape Breton, Nova Scotia.

Lingulella lepis (Salter).

Lingula lepis Salter, Murchison's Siluria, 3d ed., p. 543.—Davidson, British Foss. Brach., 3, pt. 7, No. 1, 1866, p. 54, pl. 3, figs. 53–59; British Foss. Brach., 3, pt. 7, 1871, pl. 69, figs. 31, 31a.—Walcott, Mon. U. S. Geol. Surv., 51, 1912, p. 514, pl. 31, figs. 4a–f. (See for complete bibliography.)

Lingulella cf. lepis Matthew, Geol. Surv. Canada, Rep. Cambrian Rocks Cape Breton, 1903, p. 204.

Lower Ordovician: Ceratopyge limestone and Dictyonema shales of Norway and Sweden; Upper Tremadoc of Wales.

Canadian (Bretonian—Div. C3a and C3c): Cape Breton, Nova Scotia, and St. John Basin, St. John County, New Brunswick.

Plesiotypes.—Cat. Nos. 51741, 51742, U.S.N.M.

LINGULELLA MAERA Walcott. See Obolus maera.

Lingulella manticula (White).

Lingula? manticula White (part), U. S. Geog. Surv. W. 100th Mer., Prelim. Rep. Invert. Fossils, 1874, pp. 9, 10; ibid., 4, pt. 1, 1877, p. 52, pl. 3, fig. 2b.

Lingulella manticula Walcott, Mon. U. S. Geol. Surv., 51, 1912, p. 517, pl. 20, figs. 1, 1a–c.

Lower Ordovician (Pogonip): Eureka District, Eureka County and White Pine County, Nevada. Also Upper and Middle Cambrian of Utah and Nevada.

Holotype and *plesiotype*.—Cat. Nos. 8569, U.S.N.M.

LINGULELLA? MATINALIS Walcott. See Obolus matinalis.

Lingulella minor (Matthew).

Lingulella starri minor Matthew, Trans. Roy. Soc. Canada, 9, sec. 4, 1892, pp. 58–59, pl. 40, figs. 5a–b.

Lingulella minor—Continued.

Lingulella minor Walcott, Mon. U. S. Geol. Surv., 51, 1912, p. 519, pl. 37, figs. 3–3g.

Canadian (Bretonian—Div.C3b): Long Island, Kennebecasis Bay, St. John County, New Brunswick.

LINGULELLA MINUTA Schuchert. See Linnarssonella minuta.

Lingulella moosensis Walcott.

Lingulella moosensis Walcott, Smiths. Misc. Coll., 57, 1912, p. 232, pl. 35, figs. 1–6.

Lower Ordovician (Goodsir): Ice River Valley and Mollison Creek, near Leanchoil, British Columbia.

Lingulella mosia (Hall).

Lingula mosia Hall, 16th Ann. Rep. New York State Cab. Nat. Hist., 1863, p. 126, pl. 6, figs. 1–3a; Trans. Albany Inst., 5, 1867, pp. 102–103, pl. 1, figs. 1–3a.—Sardeson, Bull. Minnesota Acad. Nat. Sci., 4, pt. 1, 1896, p. 95.

Lingulella mosia Walcott, Mon. U. S. Geol. Surv., 51, 1912, p. 520, pl. 18, figs. 1a–f.

Ozarkian (Oneota): St. Croix River, Wisconsin and Minnesota. Also Upper Cambrian of Minnesota, Iowa, etc.

Plesiotypes.—Cat. Nos. 27370, 27371, U.S.N.M.

Lingulella pogonipensis (Walcott).

Obolus (Lingulella) pogonipensis Walcott, Proc. U. S. Nat. Mus., 21, 1898, pp. 411, 412.

Lingulella pogonipensis Walcott, Mon. U. S. Geol. Surv., 51, 1912, p. 525, pl. 20, figs. 3, 3a–c.

Lowest Ordovician (?Upper Cambrian): Eureka District, Eureka County, Nevada. Also Upper Cambrian of Utah and Arizona.

Holotype and *paratypes.*—Cat. No. 27332, U.S.N.M.

Lingulella prima (Hall).

Lingula prima (Conrad MS.) Hall, Pal. New York, 1, 1847, p. 3, pl. 1, fig. 2.

Lingulella prima Walcott, Smiths. Misc. Coll., 57, 1912, p. 262, pl. 41, figs. 8–11.

Upper Cambrian or Ozarkian (Potsdam): Essex County, New York.

Plesiotype.—Cat. No. 27435, U.S.N.M.

LINGULELLA ROGERSI Grabau. See Obolus (Westonia) rogersi.

LINGULELLA? SPISSA Billings. See Obolus (Lingulobolus) spissus.

LINGULELLA STARRI MINOR Matthew. See Lingulella minor.

LINGULELLA STONEANA Whitfield. See Obolus (Westonia) stoneanus.

LINGULEPIS of authors. See Lingulella subgenus Lingulepis.

LINGULEPIS ACUMINATA Matthew. See Lingulella (Lingulepis) acuminata.

LINGULEPIS AFFINIS Walcott. See Obolus (Lingulobolus) affinis.

LINGULEPIS MAERA Hall and Whitfield. See Obolus maera.

LINGULEPIS MATINALIS Hall. See Obolus matinalis.

LINGULEPIS? MINUTA Hall and Whitfield. See Linnarssonella minuta.

LINGULEPIS MORSENSIS Winchell. See Lingula morsei.

LINGULEPIS MORSII Hall and Clarke. See Lingula morsei.

LINGULEPIS PINNAFORMIS Hall. See Obolus matinalis.

LINGULEPIS PINNAFORMIS Whitfield. See Lingulella (Lingulepis) acuminata.

LINGULEPIS STARRI var. Matthew. See Lingulella (Lingulepis) exigua.

LINGULEPIS STARRI EXIGUA Matthew. See Lingulella (Lingulepis) exigua.

LINGULOBOLUS Matthew. See Obolus subgenus Lingulobolus.

LINGULOBOLUS AFFINIS Matthew. See Obolus (Lingulobolus) affinis.

LINGULOPS Hall. Genotype: L. whitfieldi Hall.
Lingulops Hall, Notes on some New or Imperfectly Known Forms among the Brachiopoda, 1871, p. 2; ibid., 1872, p. 2, pl. 13, figs. 1, 2; 23d Rep. New York State Cab. Nat. Hist., 1873, p. 244, pl. 13, figs. 1, 2.—Davidson and King, Quart. Jour. Geol. Soc. London, 30, 1874, p. 164.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pp. 18, 46, 163; 11th Ann. Rep. New York, State Geol., 1894, p. 233.—Miller, N. A. Geol. Pal., p. 352.—Schuchert, Zittel-Eastman Textb. Pal., 1, 1900, p. 308; 2d ed., 1913, p. 374.—Clarke, Archivos Mus. Nac. Rio de Janeiro, 10, author's Eng. ed., 1900, p. 6.

Lingulops cliftonensis Foerste.
Lingulops cliftonensis Foerste, Jour. Geol., 11, 1903, p. 38.
Richmond (Fernvale): Clifton, Tennessee.

Lingulops derbyi Clarke.
Lingulops derbyi Clarke, Archivos Mus. Nac. Rio de Janeiro, 10, author's Eng. ed., 1900, p. 5, pl. 1, fig. 4.—Katzer, Grunds. d. Geol. d. unt. Amazonas., Leipzig, 1903, pl. 16, fig. 2.
Silurian: Rio Trombetas, Brazil.

Lingulops granti Hall and Clarke.
Lingulops granti Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pp. 19, 173, pl. 4K, figs. 14, 15; 48th Rep. New York State Mus., 2, for 1895, 1897, p. 328, pl. 1, figs. 7, 8; 14th Rep. State Geol. New York for 1894, 1897, p. 328, pl. 1, figs. 7, 8.
Niagaran dolomite: Hamilton, Ontario.
Plastotype.—Cat. No. 45197, U.S.N.M.

Lingulops illinoisensis Savage.
Lingulops illinoisensis Savage, Bull. Geol. Surv. Illinois, 23, 1913, p. 111, pl. 7, figs. 3, 4.
Upper Medinan (Channahon): Will County, Illinois.

Lingulops norwoodi (James).
Lingula norwoodi James, Cincinnati Quart. Jour. Sci., 2, 1875, p. 10, fig. 2; Jour. Cincinnati Soc. Nat. Hist., 6, 1883, p. 235, pl. 10, fig. 1.—Miller, N. A. Geol. Pal., 1889, p. 350, fig. 574.
Lingulops Norwoodi Huene, Verh. d. Russ.-Kais. Min. Ges. St. Petersb., 2d ser., 36, 1899, p. 336, fig. 3.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 19, pl. 2, figs. 24-26.—Hayes and Ulrich, U. S. Geol. Surv., folio 95, ill. sheet, 1903, fig. 35.
Trenton (upper): West Covington, Kentucky.

Lingulops ovata Savage.
Lingulops ovata Savage, Bull. Geol. Surv. Illinois, 23, 1913, p. 45, pl. 1, figs. 7, 8.
Upper Medinan (Girardeau): Near Thebes, Illinois.

Lingulops whitfieldi Hall.

Lingulops whitfieldi Hall, Notes on some New or Imperfectly Known Forms among the Brach., 1872, p. 2, pl. 13, fig. 12; 23d Rep. New York State Cab. Nat. Hist., 1873, pl. 13, figs. 1, 2.—Davidson and King, Quart. Jour. Geol. Soc. London, 30, 1874, p. 164, pl. 19, fig. 9.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 19, pl. 2, figs. 27–30.—Crane, Geol. Mag., dec. 4, 2, 1895, pl. 15, fig. 6.

Richmond (Maquoketa): Near Lattners, Dubuque County, Iowa.

Plastotype.—Cat. No. 45196, U.S.N.M.

Linipora Troost. Genotype: L. rotunda Troost.

Linipora Troost, 5th Geol. Rep. Tennessee, 1840, p. 64.

Linipora rotunda Troost. Not recognizable.

Linipora rotunda Troost, 5th Geol. Rep. Tennessee, 1840, p. 64.

Silurian: Near Brownsport, Tennessee.

LINNARSSONELLA Walcott. Genotype: L. girtyi Walcott.

Linnarssonella Walcott, Proc. U. S. Nat. Mus., 25, 1902, pp. 601–602; Smiths. Misc. Coll., 53, pl. 11, pp. 142–146; Mon. U. S. Geol. Surv., 51, 1912, p. 665.

Linnarssonella minuta (Hall and Whitfield).

Lingulepis? minuta Hall and Whitfield, King's U. S. Geol. Expl. 40th Parl., 4, 1877, p. 206, pl. 1, figs. 3, 4.—Walcott, Mon. U. S. Geol. Surv., 8, 1884, p. 13.

Obolella? minuta Walcott, Amer. Jour. Sci., 4th ser., 3, 1897, p. 404; Walcott, Mon. U. S. Geol. Surv., 32, pt. 2, 1899, p. 443.

Lingulella minuta Schuchert, Bull. U. S. Geol. Surv., 1897, 87, p. 257.

Acrotreta minuta Walcott, Proc. U. S. Nat. Mus., 23, 1901, p. 673.

Linnarssonella minuta Walcott, Proc. U. S. Nat. Mus., 25, 1902, pp. 603, 604; Walcott, Mon. U. S. Geol. Surv., 51, 1912, p. 667, pl. 79, figs. 2, 2a–b.

Lowest Ordovician: White Pine District, Nye County, Nevada.

Upper Cambrian: Eureka District, Nevada.

Plesiotypes.—Cat. No. 24553, U.S.N.M.

LINNARSSONIA Walcott. See Acrotreta Kutorga.

LINNARSSONIA PRETIOSA Dawson and Hinde. See Acrothele pretiosa.

LIOCLEMA Ulrich. Genotype: Callopora punctata Hall.

Leioclema Ulrich, Jour. Cincinnati Soc. Nat. Hist., 5, 1882, pp. 141, 154.—Miller, N. A. Geol. Pal., 1889, p. 310.—Ulrich, Geol. Surv. Illinois, 8, 1890, pp. 376, 425.—Rominger, Amer. Geol., 6, 1890, p. 119.

Lioclema Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 33.—Grabau, Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 165; Bull. New York State Mus., 45, 1901, p. 165.—Ulrich and Bassler, Smiths. Misc. Col., 47, 1904, p. 38.—Bassler, U. S. Geol. Surv., 292, 1906, p. 32; Bull. U. S. Nat. Mus., 77, 1911, p. 246.

Lioclema asperum (Hall).

Callopora aspera Hall, Pal. New York, 2, 1852, p. 147, pl. 40, figs. 4a–i.

Leioclema asperum Ulrich, Geol. Surv. Illinois, 8, 1890, pp. 416, 425.

Lioclema aspera Grabau, Bull. New York State Mus., 45, 1901, p. 165, fig. 63; Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 165, fig. 63.—Bassler, Bull. U. S. Geol. Surv., 292, 1906, pp. 32, 33, pl. 11, figs. 1–3; pl. 24, figs. 14–16.

Clinton: Lockport, Rochester, etc., New York; Grimsby, Ontario (Rochester); Osgood, Indiana (Osgood).

Plesiotypes.—Cat. 35504, U.S.N.M.

Lioclema circinctum Bassler.
Lioclema circinctum Bassler, Bull. U. S. Geol. Surv., 292, 1906, p. 34, pl. 13, figs. 11–14.
Clinton (Rochester): Lockport, New York.
Holotype.—Cat. No. 35509, U.S.N.M.

Lioclema explanatum Bassler.
Lioclema explanatum Bassler, Bull. U. S. Geol. Surv., 292, 1906, p. 33, pl. 13, figs. 8–10; pl. 26, fig. 4.
Clinton: Rochester, New York (Rochester); Osgood, Indiana (Osgood).
Cotypes.—Cat. No. 35503, U.S.N.M.

Lioclema? exsul (Hall).
Alveolites exsul Hall, 28th Ann. Rep. New York State Mus., doc. ed., 1876, pl. 9, figs. 3, 4.
Callopora exsul Hall, ibid., mus. ed., 1879, p.115, pl. 9, figs. 3, 4; 11th Ann. Rep. Indiana Geol. Nat. Hist., 1882, p. 238, pl. 8, figs. 3, 4.—Miller, N. A. Geol. Pal., 1889, fig. 463 (p. 295).
Lioclema? exsul Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 303.
Niagaran (Waldron): Waldron, Indiana.

LIOCLEMA FLORIDA Grabau. See Nicholsonella florida.

Lioclema globulare Bassler.
Lioclema globulare Bassler, Bull. U. S. Geol. Surv., 292, 1906, p. 35, pl. 27, figs. 18, 19.
Clinton (Rochester): Lockport, New York.
Holotype.—Cat. No. 35771, U.S.N.M.

LIOCLEMA (?NICHOLSONELLA) LAMINATUM Nickles and Bassler. See Fistulipora laminata.

Lioclema multiporum Bassler.
Lioclema multiporum Bassler, Bull. U. S. Geol. Surv., 292, 1906, p. 34, pl. 11, figs. 4–6; pl. 23, fig. 18; pl. 27, fig. 20.
Clinton: Lockport, Rochester, etc., New York; Hamilton and Grimsby, Ontario (Rochester); Waldron, Indiana (Osgood).
Cotypes.—Cat. Nos. 35501, 35764, U.S.N.M.

Lioclema peculiare Bassler.
Lioclema peculiare Bassler, Bull. U. S. Geol. Surv., 292, 1906, pp. 35, 36, pl. 23, figs. 19–22; pl. 25, fig. 13.
Clinton: Lockport, etc., New York (Rochester); Osgood, Indiana (Osgood).
Cotypes.—Cat. No. 35770, U.S.N.M.

Lioclema pulchellum Ulrich and Bassler.
Lioclema pulchellum Ulrich and Bassler, Maryland Geol. Surv., Low. Dev., 1913, p. 274, pl. 43, figs. 9–12.
Helderbergian (Keyser): Keyser, West Virginia.
Holotype.—Cat. No. 53646, U.S.N.M.

Lioclema ramulosum Bassler.
Lioclema ramulosum Bassler, Bull. U. S. Geol. Surv., 292, 1906, p. 35, pl. 11, figs. 11–13; pl. 25, figs. 9, 10.
Clinton: Lockport, New York; Grimsby, Ontario (Rochester); near Waldron, Indiana (Osgood).
Cotypes.—Cat. No. 35508, U.S.N.M.

Lioclema subramosum Ulrich and Bassler.
Lioclema subramosum Ulrich and Bassler, Maryland Geol. Surv., Low. Dev., 1913, p. 273, pl. 43, figs. 1–4; pl. 44, fig. 5.
Helderbergian (Keyser): Keyser, West Virginia; Cash Valley, Maryland.
Cotypes.—Cat. No. 53647, U.S.N.M.

Lioclema variporum (Billings).
Helopora varipora Billings, Cat. Sil. Foss. Anticosti, 1866, p. 40.
Anticostian (Jupiter River): East Point, east of Jupiter River, etc., Anticosti.

Lioclema wilmingtonense Ulrich.
Leioclema wilmingtonense Ulrich, Geol. Surv. Illinois, 8, 1890, p. 426, pl. 34, figs. 4–4b.
Monticulipora wilmingtonense J. F. James, Jour. Cincinnati Soc. Nat. Hist., 18, 1895, p. 76.
Richmond (Fernvale): Wilmington, Illinois.
Figured sections of *holotype.*—Cat. No. 43776, U.S.N.M.

LIOCLEMELLA Foerste. Genotype: Callopora ohioensis Foerste.
Lioclemella Foerste, Geol. Surv., Ohio, 7, 1895, p. 600.—Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 33.—Ulrich and Bassler, Smiths. Misc. Coll., 47, 1904, p. 39.—Bassler, Bull. U. S. Geol. Surv., 292, 1906, p. 36; Bull. U. S. Nat. Mus., 77, 1911, p. 249.

Lioclemella annulifera (Whitfield).
Trematopora annulifer Whitfield, Ann. Rep. Geol. Surv. Wisconsin for 1877, 1878, p. 67; Geol. Surv. Wisconsin, 4, 1882, p. 254, pl. 11, figs. 15–17.—Buel, Trans. Wisconsin Acad. Sci., 5, 1882, p. 187.
Batostomella annulifera Ulrich, Jour. Cincinnati Soc. Nat. Hist., 5, 1882, p. 141.
Lioclemella annulifera (Ulrich) Foerste, Geol. Surv. Ohio, 7, 1895, p. 600.
Richmond: Delafield and Iron Ridge, Wisconsin (Maquoketa); Eaton, Ohio.

Lioclemella fusiformis (Whitfield).
Chætetes fusiformis Whitfield, Ann. Rep. Geol. Sur. Wisconsin for 1877, 1878, p. 70; Geol. Sur. Wisconsin, 4, 1882, p. 248, pl. 11, figs. 13, 14.—Buel, Trans. Wisconsin Acad. Sci., 5, 1882, p. 191.
Monticulipora (Chætetes) fusiformis Chamberlin, Geol. Wisconsin, 1, 1883, p. 172, fig.
Lioclemella fusiformis (Ulrich) Foerste, Geol. Sur. Ohio, 7, 1895, p. 600.
Richmond (Maquoketa): Iron Ridge, Wisconsin.

Lioclemella maccombi Bassler.
Lioclemella maccombi Bassler, Bull. U. S. Geol. Surv., 292, 1906, p. 36, pl. 11, figs. 7–10; pl. 25, figs. 5–7.
Clinton: Lockport, Lewiston, and Niagara Falls, New York; Grimsby and Hamilton, Ontario (Rochester); Osgood, Indiana (Osgood).
Cotypes.—Cat. No. 35535, U.S.N.M.

Lioclemella nitida (Ulrich).
Trematopora? nitida Ulrich, Geol. Sur. Illinois, 8, 1890, p. 419, pl. 34, figs. 2–2f.
Lioclemella nitida (Ulrich) Foerste, Geol. Sur. Ohio, 7, 1895, p. 600.
Richmond: Savannah, Illinois (Maquoketa); Charleton Point, etc., Anticosti (Charleton).
Cotypes.—Cat. No. 43778, U.S.N.M.

Lioclemella ohioensis (Foerste).

Callopora ohioensis Foerste, Bull. Sci. Lab. Denison Univ., 2, 1887, p. 174; ibid., 3, 1888, pl. 16, fig. 6.

Lioclemella ohioensis Foerste, Geol. Sur. Ohio, 7, 1895, p. 600, pl. 29, fig. 6.—Ulrich and Bassler, Smiths. Misc. Coll., Quart., 47, 1904, p. 39, pl. 12, figs. 6–9.

Upper Medinan (Brassfield): Dayton and Centerville, Ohio.

Plesiotypes.—Cat. No. 44063, U.S.N.M.

Lioclemella solidissima (Whitfield).

Fistulipora solidissima Whitfield, Ann. Rep. Geol. Sur. Wisconsin for 1877, 1878, p. 69; Geol. Sur. Wisconsin, 4, 1882, p. 255, pl. 11, 18, 19.—Buel, Trans. Wisconsin Acad. Sci., 5, 1882, p. 188.

Lioclemella solidissima Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 308.

Richmond (Maquoketa): Delafield and Iron Ridge, Wisconsin; Savannah, Illinois.

Lioclemella subfusiformis (James).

Monticulipora (?Monotrypa) subfusiformis James, Paleontologist, No. 6, 1882, p. 52; ibid., No. 7, 1883, pl. 1, 1.

Monticulipora fusiformis (not of Whitfield) James and James, Jour., Cincinnati Soc. Nat. Hist., 11, 1888, p. 26.—J. F. James, ibid., 18, 1895, p. 83.

Lioclemella subfusiformis Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 308.—Bassler, Proc. U. S. Nat. Mus., 30, 1906, p. 42, pl. 7, figs. 4–7.

Richmond (Waynesville): Warren and Clinton Counties, Ohio; Indiana and Kentucky.

LIOSPIRA Ulrich and Scofield.

Genotypes: Pleurotomaria micula Hall and P. americana Billings.

Pleurotomaria and Raphistoma (part) of many authors.

Liospira Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 953.—Koken, Neues Jahrb. f. Min. Geol. Pal., 1, 1898, p. 18.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 950.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 640.—Dall, Zittel-Eastman Textb. Pal., 2d ed., 1913, p. 525.

Liospira abrupta Ulrich and Scofield.

Liospira abrupta Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 995, pl. 82, figs. 35–38.

Stones River (Murfreesboro): Murfreesboro, Tennessee.

Black River: High Bridge, Kentucky; Minneapolis and Chatfield, Minnesota.

Cotypes.—Cat. No. 46060, U.S.N.M.

Liospira affinis (Foerste).

Raphistoma affinis Foerste, Bull. Sci. Lab. Denison Univ., 1885, p. 95, pl. 14, fig. 18; Geol. Surv. Ohio, Pal., 7, 1893, p. 550, pl. 26, fig. 18; pl. 37A, figs. 1a–c.

Liospira cf. affine Savage, Bull. Geol. Surv. Illinois, 23, 1913, p. 95, pl. 6, fig. 5.

Upper Medinan: Near Dayton, and Clinton County, Ohio; Summerville, Georgia (Brassfield); Pike County, Missouri, and Calhoun County, Illinois (Edgewood)

Liospira americana (Billings).

Pleurotomaria (or Raphistoma) lenticularis (part) of American authors. (Not Sowerby.)

Pleurotomaria americana Billings, Can. Nat. Geol., 5, 1860, p. 164, fig. 7; Geol. Canada, Geol. Surv. Canada, 1863, p. 184, fig. 179; Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 17 (loc. ref.).

Liospira americana—Continued.

Liospira americana Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 3, 1897, p. 191.—Schuchert, Proc. U. S. Nat. Mus., 22, 1900, p. 165.—Ruedemann, Bull. New York State Mus., 49, 1901, p. 31, pl. 2, fig. 7.

Stones River—Richmond: Ottawa, Montreal, etc., Canada; Manitoba; Baffin Land; Minnesota (Trenton); Lebanon and Maury Counties, Tennessee (Stones River and Black River); Island of Anticosti, etc. (Richmond).

Liospira angulata Ulrich.

Liospira angulata Ulrich, Geol. Minnesota, 3, pt. 2, 1897, p. 1000, pl. 69, figs. 42-46.

Black River (Lowville): Mercer County, Kentucky.

Cotypes.—Cat. No. 45869, U.S.N.M.

Liospira angustata Ulrich and Scofield.

Liospira angustata Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 997, pl. 68, figs. 35-37; pl. 69, figs. 1-2.—Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 3, 1897, p. 192.

Black River and Trenton: Minneapolis, Minnesota (Platteville); Fillmore County, Minnesota (Prosser); Inmost Island, Lake Winnipeg.

Cotypes.—Cat. No. 45870, U.S.N.M.

Liospira convexa Ulrich and Scofield.

Liospira convexa Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 998.

Stones River (Ridley): Rutherford County, Tennessee.

Cotypes.—Cat. No. 47804, U.S.N.M.

Liospira decipens Ulrich.

Liospira decipens Ulrich, Geol. Minnesota, 3, pt. 2, 1897, p. 998, pl. 82, figs. 39-41.

Raphistoma decipiens Miller, N. A. Geol. Pal., 2d App., 1897, p. 770 (gen. ref.).

Stones River (Murfreesboro): Murfreesboro, Tennessee.

Holotype.—Cat. No. 45871, U.S.N.M.

Liospira docens (Billings).

Pleurotomaria docens Billings, Canadian Nat. Geol., 4, 1859, p. 452, figs. 27-29; Geol. Canada, Geol. Surv. Canada, 1863, p. 132, figs. 63a-c.—Lesley, Rep. Geol. Surv. Pennsylvania, 4, 1889, p. 707, figs.—Raymond, Ann. Carnegie Mus., 4, 1908, p. 176.

Liospira docens Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 994 (gen. ref.).—Raymond, Ann. Carnegie Mus., 4, 1908, p. 193.

Stones River (Pamelia): Near L'Original, Canada.

Liospira eugenia (Billings).

Pleurotomaria eugenia Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 30, figs. 29-31 (adv. sheets 1862); Geol. Canada, Geol. Surv. Canada, 1863, p. 144, figs. 87a-c.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 708, figs.

Liospira eugenia Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 994 (gen. ref.).—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 640, fig. 872.

Black River: St. Joseph Island, Lake Huron.

Liospira helena (Billings).

Pleurotomaria helena Billings, Canadian Nat. Geol., 5, 1860, p. 165, fig. 8; Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 17 (loc. ref.).

Liospira helena Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 994 (gen. ref.).

Richmond and Gamachian: Cape Smyth, Manitoulin Island; Charleton Point and Macasty Bay, Anticosti.

Liospira larvata (Salter).

Helicotoma larvata Salter, Geol. Surv. Canada, dec. 1, 1859, p. 15, pl. 2, figs. 11-14.

Liospira larvata Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 994 (gen. ref.).

Helicotoma(?) (Liospira?) larvata Schuchert, Proc. U. S. Nat. Mus., 22, 1900, p. 166.

Mohawkian: Allumette Island, Ottawa River, Canada (Black River-Leray); Baffin Land.

Liospira micula (Hall).

Pleurotomaria micula Hall, Geol. Rep. Wisconsin, 1862, p. 55, fig. 1.

Raphistoma micula James, J. F., Amer. Geol., 5, 1890, p. 355.

Liospira micula Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 994, pl. 68, figs. 24-29.—Weller, Geol. Surv. New Jersey, Pal., 3, 1903, p. 182, pl. 12, figs. 24, 25.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 640, figs. 871a-d.

Trenton-Richmond: Wisconsin, Illinois, Iowa, Minnesota (Maquoketa); Kentucky, Ohio, Indiana, Tennessee, etc.; New Jersey, etc.

Plesiotypes.—Cat. No. 45872, U.S.N.M. (Ulrich and Scofield).

Liospira modesta Ulrich.

Liospira modesta Ulrich, Geol. Minnesota, 3, pt. 2, 1897, pl. 82, figs. 42-44.

Black River (Decorah): Chatfield, Minnesota.

Holotype.—Cat. No. 45873, U.S.N.M.

Liospira(?) mundula Ulrich.

Liospira(?) mundula Ulrich, Geol. Minnesota, 3, pt. 2, 1897, p. 999, pl. 69, figs. 37-41.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 642, figs. 875a, b.

Black River (Leray): Pauquettes Rapids, Ottawa River, Canada.

Trenton: Mercer County and Danville, Kentucky.

Cotypes.—Cat. No. 45874, U.S.N.M.

Liospira numeria (Billings).

Pleurotomaria numeria Billings, Pal. Foss., Geol. Surv. Canada, 1865, p. 229, figs. 213a, b.

Liospira numeria Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 994 (gen. ref.).

Canadian (Quebec—G): Cape Norman, Newfoundland.

Liospira obtusa Ulrich and Scofield.

Liospira obtusa Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 997, pl. 68, figs. 30-34.

Black River (Platteville): Minneapolis, Minnesota; Dixon, Illinois; Beloit, Wisconsin.

Cotypes.—Cat. No. 45875, U.S.N.M.

Liospira perlata (Hall).

Pleurotomaria perlata Hall, Pal. New York, 2, 1852, p. 349, pl. 84, figs. 5a-c.—Chamberlin, Geol. Wisconsin, 1, 1883, p. 193, fig.—Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 1, 1884, p. 22; ibid., pt. 2, 1895, p. 75.

Liospira perlata (Ulrich) Whiteaves, Geol. Surv. Canada, Pal. Foss., 3, pt. 4, 1906, p. 332 (gen. ref.).

Pleurotomaria solarioides Billings, Geol. Canada, 1863, p. 341, figs. 347a, b.—Lesley, Geol. Survey Pennsylvania, Rep. P 4, 1889, p. 715, figs.

Niagaran (Guelph): Galt, Ontario; Wisconsin.

Liospira persimilis Ulrich.

Liospira persimilis Ulrich, Geol. Minnesota, 3, pt. 2, 1897, p. 998, pl. 68, figs. 45–47.—Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 3, 1897, p. 192 (loc. occ.).

Trenton: Hartsville, Tennessee (Catheys); Reindeer Island, Lake Winnipeg.

Cotypes.—Cat. No. 45876, U.S.N.M.

Liospira prævia (Whitfield).

Raphistoma prævium Whitfield, Bull. Amer. Mus. Nat. Hist., 2, 1889, p. 52, pl. 8, figs. 5–7.—Koken, Neues Jahrb. f. Min., Geol. Pal., 6, Beilage-Band, 1889, p. 478.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 851, figs.

Liospira prævium Ulrich and Schofield, Geol. Minnesota, 3, pt. 2, 1897, p. 993 (gen. ref.).

Canadian (Beekmantown): Beekmantown, New York.

Liospira progne (Billings).

Pleurotomaria Progne Billings, Canadian Nat. Geol., 5, 1860, p. 163, fig. 6; Geol. Canada, Geol. Surv. Canada, 1863, p. 181, fig. 176.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 714, figs.

Liospira progne Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 996, pl. 48, figs. 38–44.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 640, fig. 871e–g.

Stones River-Trenton: Ottawa, Montreal, Belleville, etc., Canada (Trenton); Murfreesboro and Lebanon, Tennessee (Stones River and Black River); Kentucky; Minnesota; etc.

Plesiotypes.—Cat. Nos. 45877–45880, U.S.N.M.

Liospira rugata Ulrich.

Liospira rugata Ulrich, Geol. Minnesota, 3, pt. 2, 1897, p. 999, pl. 69, figs. 33–36.

Richmond (Arnheim): Lincoln County, Kentucky.

Holotype.—Cat. No. 45881, U.S.N.M.

Liospira strigata Collie.

Liospira strigata Collie, Bull. Geol. Soc. America, 14, 1903, p. 419, pl. 59, figs. 8, 9.

Canadian (Beekmantown): Bellefonte, Pennsylvania.

Liospira subconcava Ulrich.

Liospira subconcava Ulrich, Geol. Minnesota, 3, pt. 2, 1897, p. 999, pl. 69, figs. 30–32.

Stones River (Murfreesboro): Near Murfreesboro, Tennessee.

Cotypes.—Cat. No. 46061, U.S.N.M.

Liospira subtilistriata (Hall).

Pleurotomaria subtilistriata Hall, Pal. New York, 1, 1847, p. 172, pl. 37, figs. 5a–d.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 233, pl. 6, figs. 11, 12.—Ford and Dwight, Amer. Jour. Sci. Arts, 3d ser., 31, 1886, p. 253, pl. 7, figs. 1, 10a–i.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 717, figs.

Raphistoma subtilistriata Miller, N. A. Geol. Pal., 1889, p. 425 (gen. ref.).

Liospira subtilistriata Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 944 (gen. ref.).—Ruedemann, Bull. New York State Mus., 49, 1901, p. 33.

Trenton: Watertown, etc., New York.

Liospira vitruvia (Billings).

Pleurotomaria Vitruvia Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 171.

Liospira vitruvia Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 995, pl. 69, figs. 3–8.—Cumings, 32d, Ann. Rep. Dep. Geol. Nat. Res. Indiana,

Liospira vitruvia—Continued.

1908, p 965, pl. 40, figs. 14, 14b.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 641, figs. 871h–k.—Foerste, Jour. Cincinnati Soc. Nat. Hist., 21, 1914, p. 139.

Black River—Richmond: Pauquette's Rapids, Ottawa River, etc., Canada (Black River); New York; Ohio; Kentucky; Tennessee; Iowa; Wisconsin; Minnesota, etc.

Plesiotypes.—Cat. Nos. 45882–45884, U.S.N.M.

LIOSTRACUS HAGUEI Brögger. See Ptychoparia haguei.

LIOSTRACUS? JERSEYENSIS Weller. See Solenopleura jerseyensis.

LISANIA Walcott. Genotype: Anomocarella? bura Walcott.

Lisania Walcott, Smiths. Misc. Coll., 57, No. 4, 1911, pp. 82, 83; Cambrian Faunas of China, Carnegie Inst., 3, 1913, p. 163.

Lisania? hisingeri (Billings).

Dikelocephalus Hisingeri Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 196, fig. 182.

Conocephalites hisingeri Matthew, Trans. Roy. Soc. Canada, 10, sec. 4, 1893, p. 11, footnote.

Lisania? hisingeri Walcott, Smiths. Misc. Coll., 57, No. 13, 1914, p. 351 (gen. ref.).

Ozarkian? (Levis-erratic): Point Levis, Quebec.

LISSATRYPA Twenhofel. Genotype: L. atheroidea Twenhofel.

Lissatrypa Twenhofel in Holtedahl, 2d Arct. Exp. Fram, 1898–1902, No. 32, 1914, p. 24.—Twenhofel, Bull. Victoria Mem. Mus., 3, 1914, p. 31.

Lissatrypa atheroidea Twenhofel.

Lissatrypa atheroidea (Twenhofel MS.) Holtedahl, 2d Arct. Exp. "Fram," 1898–1902, No. 32, 1914, p. 24.—Twenhofel, Bull. Victoria Mem. Mus., 3, 1914, p. 33, pl. 1, figs. 11–15.

Anticostian (Gun River, Jupiter River): Jupiter River, etc., Anticosti.

Lissatrypa phoca (Salter).

Rhynchonella phoca Salter, Sutherland's Jour. Voyage Baffin's Bay, etc., 2, 1852, p. 226, pl. 5, figs. 1–3.

Atrypa phoca Haughton, Journ. Geol. Soc. Dublin, 1, 1859, p. 240, pl. 5, figs. 3, 4, 7.—Etheridge, Quart. Jour. Geol. Soc. London, 34, 1878, p. 576.—Woodward, Geol. Mag., dec. 2, 5, 1878, p. 389, pl. 10, fig. 8.—Lambe, Cruise of the "Arctic" in 1908–9, 1910, p. 481.—Lee, Proc. Roy. Phys. Soc. Edinburgh, 18, 1912, p. 258.

Hindella phoca Ami, Cruise of the "Neptune," App., 1906, p. 329.

Lissatrypa phoca Holtedahl, 2d Arct. Exp. "Fram," 1898–1902, No. 32, 1914, p. 25, pl. 7, fig. 13.

Silurian: Cape Riley, Seal Islands, Bessels Bay, etc., Arctic America.

Lissatrypa scheii Holtedahl.

Lissatrypa scheii Holtedahl, 2d Arct. Exp. "Fram," 1898–1902, No. 32, 1914, p. 24, pl. 7, figs. 9–12.

Helderbergian (Lower beds): Seal Bay, etc., Southwestern Ellesmereland, Arctic America.

LITHODENDRON DICHOTOMUM Eaton. See Buthotrephis gracilis.

Lithodictuon Conrad. Genotype: L. beckii Conrad.

Lithodictuon Conrad, 1st Ann. Rep. New York Geol. Surv., 1837, p. 167, footnote.

Observation.—Not recognized. Founded on sand fillings in sun cracks.

Lithodictuon beckii Conrad.
Lithodictuon Beckii Conrad, 1st Ann. Rep. New York Geol. Surv., 1837, p. 167, footnote.
Dictuolites beckii Hall, Nat. Hist. New York, Geol., 4, 1843, p. 48, pl. 1, fig. 1; ibid., Pal. New York, 2, 1852, p. 6, pl. 3, fig. 1.
Dictyophyton becki Miller, N. A. Geol. Pal., 1889, p. 158 (gen. ref.).
Upper Medinan: Near Medina, New York.

LITHOSTROTION STOKESI Edwards and Haime. See Columnaria (Palæophyllum) stokesi.

LITOCERAS Hyatt. Genotype: L. whiteavesi Hyatt.
Litoceras Hyatt, Proc. Boston Soc. Nat. Hist., 22, 1884, p. 268.—Miller, N. A. Geol. Pal., 2d App., 1897, p. 774.—Hyatt, Proc. Amer. Phil. Soc., 32, 1894, p. 474.

Litoceras biangulatum Hyatt.
Litoceras biangulatum Hyatt, Proc. Amer. Phil. Soc. 32, 1894, p. 479.
Canadian (Quebec): Point Rich, Newfoundland.

Litoceras hercules (Billings).
Nautilus hercules Billings, Geol. Surv. Canada, Rep. Progr. for 1853–56, 1857, p. 306; Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 23 (loc. ref.).
Litoceras? hercules Hyatt, Proc. Amer. Phil. Soc., 32, 1894, p. 480.
Richmond (Charleton): Charleton Point, Anticosti.

Litoceras insigne (Whiteaves).
Apsidoceras insigne Whiteaves, Trans. Roy. Soc. Canada, 7, sec. 4, 1890, p. 82, pl. 17.
Litoceras insigne Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 2, 1895, p. 125.
Richmond (Stony Mountain): Stony Mountain, Manitoba.

Litoceras? insolens (Billings).
Nautilus insolens Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 258.
Litoceras insolens? Hyatt, Proc. Amer. Phil. Soc., 32, 1894, p. 476.
Chazyan (Quebec—L): Point Rich and Gargamelle Cove, west coast Newfoundland.

LITOCERAS VERSUTUM Hyatt. See Litoceras whiteavesi.

Litoceras versutum (Billings).
Nautilus versutus Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 258.
Canadian (Quebec—H): Bonne Bay, Newfoundland.

Litoceras whiteavesi Hyatt.
Litoceras versutum Hyatt (not Billings), Proc. Boston Soc. Nat. Hist., 22, 1884, p. 268.
Litoceras whiteavesi Hyatt, Proc. Amer. Phil. Soc., 32, 1894, p. 475.
Canadian (Quebec): Point Rich and Gargamelle Cove, Newfoundland.

LITTORINA ANTIQUA Hall. See Holopea antiqua.

LITTORINA CANCELLATA Hall. See Strophostylus cancellatus.

LITUITES Montfort. Genotype: L. lituus Montfort.
Lituites Montfort, Conch. Syst., 1, 1808, p. 279.—Quenstedt, Neues Jahrb. f. Min., etc., 1840, p. 276.—D'Orbigny, Prodr. de Pal., 1, 1849, p. 1.—Saemann, Palæontographica, 3, 1852, pp. 159, 163.—Pictet, Traite de Pal., 2d ed., 2, 1854, p. 630.—McCoy, British Pal. Rocks Foss., 1854, p. 323.—Barrande,

LITUITES—Continued.

Neues Jahrb. f. Min., etc., 1854, p. 6, pl. 1, fig. 3.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 146.—Barrande, Bull. Soc. Geol. France, 2d ser., 12, 1855, p. 158.—Billings, Canadian Nat. Geol., 2, 1857, p. 136.—Chapman, Canadian Jour., n. s., 8, 1863, p. 23; Expos. Min. Geol. Canada, 1864, p. 131.—Barrande, Syst. Sil. du Centre Boheme, 2, 1867, pt. 1, p. 168; Cephalopodes, Ext. Syst. Sil. du Centre Boheme, 1877, p. 107.—Koninck, Ann. d. Mus. Roy. Hist. Nat. de Belgique, 2, 1878, p. 82.—Angelin, Fragmenta Silurica, 1880, p. 8.—Remele, Zeits. d. d. geol. Gesell., 32, 1880, p. 434.—Blake, Mon. British Foss., Cephalopoda, 1882, p. 66.—Noetling, Zeits. d. d. geol. Gesell., 34, 1882, pp. 156, 189.—Hyatt, Proc. Boston Soc. Nat. Hist., 22, 1883, p. 267, footnote.—Noetling, Jahrb. d. k. Preuss. geol. Landesans. u. Bergak. für 1883, 1884, p. 129.—Zittel, Handb. Pal., 2, 1884, pp. 376, 377.—Holm, Pal. Abhandl., Dames and Kayser, 3, Heft 1, 1885, p. 24.—Miller, N. A. Geol. Pal., 1889, p. 442.—Holm, Geol. Foren. Stockholm Forhandl., 13, 1891, p. 438.—Schröder, Pal., Abhandl. von Dames u. Kayser, Neue Folge, 1, Heft 4, Jena, 1891, p. 43.—Hyatt, Proc. Amer. Phil. Soc., 32, 1894, p. 506.—Koken, Die Leitfossilien, Leipzig, 1896, p. 50, fig. 35.

Observation.—This genus is apparently unrepresented in American strata, and all references to it by American authors are probably erroneous.

LITUITES AMERICANUS Miller. See Barrandeoceras americanum.

LITUITES AMMONIUS James. See Trocholites ammonius.

LITUITES APOLLO Billings. See Eurystomites apollo.

LITUITES BAERI James. See Gyroceras baeri.

LITUITES BICKMOREANUS Whitfield. See Plectoceras bickmoreanum.

LITUITES CANCELLATUM McChesney. See Nautilus? cancellatum.

LITUITES CAPAX Hall. See Nautilus capax.

LITUITES CIRCULARIS James. See Trocholites circularis.

LITUITES COMPLANATA Shumard. See Aphetoceras complanatum.

LITUITES CONVOLVANS Hall. See Barrandeoceras americanum.

LITUITES EATONI Whitfield. See Schroederoceras eatoni.

LITUITES EATONI CASSINENSIS Whitfield. See Schrœderoceras cassinense.

LITUITES FARNSWORTHI Billings. See Aphetoceras farnsworthi and Tarphyceras farnsworthi.

LITUITES GRAFTONENSIS Meek and Worthen. See Discoceras graftonense.

LITUITES HERCULES Winchell and Marcy. See Protophragmoceras hercules.

LITUITES (OPHIDIOCERAS?) HERCULES CARROLLENSIS Kindle and Breger. See Protophragmoceras hercules carrollensis.

LITUITES IMPERATOR Billings. See Eurystomites imperator.

LITUITES INTERNASTRIATUS Whitfield. See Trocholites internastriatus.

LITUITES? MAGNIFICUM Billings. See Apsidoceras magnificum.

LITUITES MARSHII Hall. See Discoceras marshi.

LITUITES MULTICOSTATUS Whitfield. See Discoceras graftonense.

Lituites murchisoni Troost. Not recognized.
Lituites murchisoni Troost, 6th Geol. Rep. Tennessee, 1841, p. 175.
Ordovician: Washington County, Tennessee.

Lituites?? niagarensis Spencer.
Lituites niagarensis Spencer, Bull. Mus. Univ. State Missouri, 1, 1884, p. 69, pl. 7, fig. 9; Trans. Acad. Sci. St. Louis, 4, 1884, p. 610, pl. 7, fig. 9.
Niagaran dolomite: Hamilton, Ontario.
Observation.—Poorly defined and figured.

LITUITES ORTONI Meek. See Discoceras ortoni.

LITUITES PALINURUS Billings. See Schrœderoceras palinurus.

LITUITES PLANORBIFORMIS James. See Trocholites planorbiformis.

Lituites?? pluto Billings.
Lituites Pluto Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 259.
Chazyan (Quebec—L): Point Rich, Newfoundland.

LITUITES ROBERTSONI Hall. See Eurystomites robertsoni.

LITUITES SEELYI Whitfield. See Tarphyceras seelyi.

LITUITES UNDATUS Hall. See Plectoceras halli and P. undatum.

LITUITES UNDATUS var. OCCIDENTALIS Hall. See Plectoceras undatum occidentale.

LLOYDIA Vogdes. Genotype: Bathyurus bituberculatus Billings.
Lloydia Vogdes, Bull. U. S. Geol. Surv., 63, 1890, p. 97; Cal. Acad. Sci., Occ. Pap., 4, 1893, p. 320.—Raymond, Bull. Victoria Memorial Mus., 1, 1913, p. 66.

Lloydia bituberculatus (Billings).
Bathyurus bituberculatus Billings, Canadian Nat. Geol., 5, 1860, p. 319, fig. 22; Geol. Canada, Geol. Surv. Canada, 1863, p. 238, fig. 270; Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 410, fig. 391.
Lloydia bituberculatus Vogdes, Bull. U. S. Geol. Surv., 63, 1890, p. 97.—Raymond, Bull. Victoria Memorial Mus., 1, 1913, p. 67, pl. 7, fig. 15.
Ozarkian? (Levis—erratics): Point Levis, Quebec.

Lloydia oblongus (Billings).
Bathyurus oblongus Billings, Canadian Nat. Geol., 5, 1860, p. 321, fig. 25; Geol. Canada, Geol. Surv. Canada, 1863, p. 238, fig. 268 (fig. only); Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 412, fig. 394.
Lloydia oblongus Raymond, Bull. Victoria Memorial Mus., 50, 1913, p. 68.
Ozarkian? (Levis—erratics): Point Levis, Quebec.

Lloydia saffordi (Billings).
Bathyurus Saffordi Billings, Canadian Nat. Geol., 5, 1860, p. 320, fig. 24; ibid., 6, 1861, p. 313, figs. 1, 2; Geol. Canada, Geol. Surv. Canada, 1863, p. 239, figs. 274a, b.—Chapman, Canadian Jour., n. s., 8, 1863, p. 29, fig. 142a; p. 192, fig. 162; Expos. Min. Geol. Canada, 1864, p. 137, fig. 142a; p. 164, fig. 162.—Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 259, figs. 241a, b; p. 411, fig. 393.
Lloydia saffordi Raymond, Bull. Victoria Memorial Mus., 1, 1913, p. 67, pl. 7, fig. 16.
Canadian (Beekmantown): Phillipsburg and Point Levis, Quebec; Cowhead, Newfoundland.

Lloydia solitarius (Billings).
Bathyurus solitarius Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 362.
Lloydia solitarius Raymond, Bull. Victoria Memorial Mus., 1, 1913, p. 67.
Canadian(?): Hare Bay, Newfoundland.

Lloydia? strenuus (Billings).
Bathyurus strenuus Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 204, fig. 188.
Lloydia strenuus Raymond, Bull. Victoria Memorial Mus., 1, 1913, p. 68.
Canadian (Beekmantown): St. Antoine, above Quebec, Canada.

LOCKEIA James. Genotype: L. siliquaria James.
Lockeia James, Paleontologist, No. 3, 1879, p. 17; Jour. Cincinnati Soc. Nat. Hist., 7, 1885, p. 161.

Lockeia siliquaria James.
Lockeia siliquaria James, Paleontologist, No. 3, 1879, p. 17.
Dawsonia siliquaria James, Jour. Cincinnati Soc. Nat. Hist., 14, pt. 2, 1892, p. 162, fig. 7.
Trenton (upper): Ohio River bank, near Ludlow, Kentucky.

LOCULIPORA Hall. Genotype: Fenestella perforata Hall.
Loculipora Hall, Rep. State Geol. New York for 1884, 1885, p. 37.—Hall and Simpson, Pal. New York, 6, 1887, p. xxiii.—Miller, N. A. Geol. Pal., 1889, p. 312.—Simpson, 13th Ann. Rep. State Geol. New York for 1893, 1895, pp. 690, 716, 726; 47th Ann. Rep. New York State Mus., pp. 884, 910, 920; 14th Ann. Rep. State Geol. New York for 1894, 1897, pp. 511, 520.—Grabau, Bull. Buffalo Soc. Nat. Sci., 6, 1899, p. 160.—Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, pp. 38, 308.—Bassler, Bull. U. S. Geol. Surv., 292, 1906, p. 52.
Tectulipora Hall, 7th Ann. Rep. State Geol. New York for 1887, 1888 [p. 395]; 41st Ann. Rep. New York State Mus. [p. 395]. (Not defined.)—Simpson, 13th Ann. Rep. State Geol. New York for 1893, 1895, pp. 690, 715, 726; 47th Ann. Rep. New York State Mus., pp. 884, 909, 920; 14th Ann. Rep. State Geol. New York, 1897, pp. 511, 520.

Loculipora ambigua (Hall).
Hemitrypa dubia Hall, 28th Ann. Rep. New York State Mus., 1876 (doc. ed.), pl. 11, figs. 17-21.
Fenestella ambigua Hall, ibid., 1879, (Mus. ed.), p. 123, pl. 11, figs. 17-21; 11th Ann. Rep. Indiana Geol. Nat. Hist., 1882, p. 248, pl. 11, figs. 17-21.
Loculipora ambigua Miller, N. A. Geol. Pal., 1889, p. 312.—Bassler, Bull. U. S. Geol. Surv., 292, 1906, pl. 18, figs. 13-16; pl. 21, fig. 1.
Isotrypa ambigua Ulrich, Geol. Surv. Illinois, 8, 1890, p. 534.
Loculipora (Fenestella) ambigua Lesley, Rep. Geol. Surv. Pennsylvania, P 4, 1889, p. 356, figs.
Niagaran (Waldron): Waldron, Indiana.

Loculipora ambigua precursor Bassler.
Loculipora ambigua var. precursor Bassler, Bull. U. S. Geol. Surv., 292, 1906, p. 53.
Clinton: Lockport, New York (Rochester); Osgood, Indiana (Osgood).
Cotypes.—Cat. Nos. 35554, 35555, U.S.N.M.

Loculipora ulrichi Bassler.
Loculipora ulrichi Bassler, Bull. U. S. Geol. Surv., 292, 1906, p. 53, pl. 21, fig. 2; pl. 25, figs. 22-24.

Loculipora ulrichi—Continued.
Clinton (Rochester): Lockport, Rochester, etc., New York; Grimsby and Thorold, Ontario.
Cotypes.—Cat. No. 35766, U.S.N.M.

LOGANELLUS Devine. Genotype: L. quebecensis Devine.
Loganellus Devine, Canadian Nat. Geol., 8, 1863, p. 98.—Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, pp. 200, 201.—Hall and Whitfield, U. S. Geol. Expl. 40th Parl., 4, 1877, p. 209.—Miller, N. A. Geol. Pal., 1889, p. 555.

Loganellus logani (Devine).
Olenus? Logani Devine, Canadian Nat. Geol., 8, 1863, p. 95, figs. 1, 2. (Named Loganellus quebecensis at end of description.)—Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 201, figs. 185, 186.
Ptychoparia logani Walcott, Bull. U. S. Geol. Surv., 10, 1884, p. 36.
Loganellus quebecensis Miller, N. A. Geol. Pal., 1889, p. 555, fig. 1029.
Ozarkian? (Levis-erratic): Point Levis, Quebec.

LOGANELLUS QUEBECENSIS Miller. See Loganellus logani.

LOGANOGRAPTUS Hall. Genotype: Graptolithus logani Hall.
Loganograptus Hall, 20th Rep. New York State Cab. Hist., 1868, p. 251, rev. ed.—Zittel, Handb. Pal., 1, 1879, p. 299.—Miller, N. A. Geol. Pal., 1st App., 1892, p. 669.—Barrois, Ann. Soc. Geol. du Nord., 21, Lille, 1893, p. 108.—Koken, Die Leitfossilien, Leipzig, 1896, p. 415.—Wiman, Bull. Geol. Inst. Univ. Upsala, 2, pt. 2, No. 4, 1896, p. 265.—Elles, Quart. Jour. Geol. Soc. London, 54, 1898, p. 475.—Elles and Wood, Mon. British Grapt., Pal. Soc., 1902, p. 80.—Ruedemann, Mem. New York State Mus., 7, 1904, p. 630, 631.
Loganograpsus Nicholson, Mon. British Grapt., 1872, p. 110; Ann. Mag. Nat. Hist., 4th ser., 11, 1873, p. 138.

LOGANOGRAPTUS KJERULFI Herrman. See Dichograptus octobrachiatus.

Loganograptus logani (Hall).
Graptolithus logani Hall, Geol. Surv. Canada, Rep. for 1857, p. 115; Canadian Nat. Geol., 3, 1858, p. 142, pl. 1, figs. 1-6; pl. 2, figs. 1-4; 12th Rep. New York State Cab. Nat. Hist., 1859, p. 51, figs. 12, 13, p. 50; Pal. New York, 3, 1859, p. 502, figs. 1-3.—Billings, Geol. Canada, Geol. Surv. Canada, 1863, p. 226, fig. 234.—Chapman, Expos. Min. and Geol. Canada, 1864, p. 100, fig. 67; p. 163, fig. 159.—Hall, Geol. Surv. Canada, Canada Org. Rem., dec. 2, 1865, p. 100, pl. 9, figs. 1-9; pl. 11, fig. 7, p. 9, figs. 5, 6.—Chapman, Canadian Jour., 8, 1863, p. 191, fig. 159.—Miller, N. A. Geol. Pal., 1889, p. 190, fig. 178.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 265, figs.
Graptolithus (Loganograptus) logani Hall, 20th Rep. New York State Cab. Nat. Hist., 1868, p. 175, figs. 6, 7; p. 226; rev. ed., 1870, p. 208, figs. 6, 7; p. 238.
Graptolithus (Monoprion) logani Hall, ibid., 1868, p. 223; rev. ed., p. 260.
Graptolites (Didymograptus) logani McCoy, Geol. Surv. Victoria, Prodr. Pal. Victoria, dec. 1, 1874, p. 19.
Dichograpsus logani Nicholson, Ann. Mag. Nat. Hist., 4th ser., 1, 1868, p. 56, pl. 3, fig. 5.
Dichograptus logani Nicholson, Quart. Jour. Geol. Soc. London, 24, 1868, p. 128.—Herrmann, Geol. Mag., dec. 3, 3, 1886, p. 24.—Matthew, Trans. Royal Soc. Canada, 10, sec. 4, 1893, p. 97; ibid., 11, 1893, p. 114.—Roemer and Frech, Leth. Pal., 1, 1897, p. 595, fig. 162; pl. 3, fig. 9.

Loganograptus logani—Continued.

Loganograptus logani Hall, 20th Ann. Rep. New York State Cab. Nat., 1867, p. 226.—Nicholson, Mon. British Grapt., pt. 1, 1872, p. 109, fig. 52c; p. 110.—Etheridge, Ann. Mag. Nat. Hist., 4th ser., 14, 1874, p. 4, pl. 3, figs. 11, 12.—Ami, Geol. Surv. Canada, Rep., 2d ser., 3, pt. 2, 1889, p. 117k.—Elles, Quart. Jour. Geol. Soc. London, 54, 1898, p. 476.—Ruedemann, Ann. Rep. New York State Pal., 1902, pp. 556, 570.—Elles and Wood, Mon. British Grapt., pt. 1, Pal. Soc., 1902, p. 81, pl. 11, figs. 1a-g.—Ruedemann, Mem. New York State Mus., 7, pt. 1, 1904, pp. 631-633, pl. 9, figs. 3-6; fig. 46.

Dichograptus (Loganograptus) logani Grabau and Shimer, N. A. Index Fossils, 1, 1906, p. 28, fig. 41a.

Canadian: Point Levis, Quebec (Levis, Didymograptus and Diplograptus dentatus zones); Deepkill, Rensselaer County, New York (Deepkill, Tetragraptus and D. dentatus zones); St. Johns, New Brunswick (Bretonian—Div. C 3d); England; Australia.

LOMATOCERAS Bronn. See Monograptus Geinitz.

LONCHOCEPHALUS Owen. Genotype: L. chippewaensis Owen.

Lonchocephalus Owen, Rep. Geol. Wisconsin, Iowa, Minnesota, 1852, p. 575.—Barrande, N. Jahrb. f. Min., 1853, p. 336.—Hall, 16th Ann. Rep. New York State Cab. Nat. Hist., 1863, pp. 147, 160.—Shumard, Trans. Acad. Sci. St. Louis, 2, 1863, p. 104.—Hall, Trans. Albany Inst., 5, 1867, p. 129.—Miller, N. A. Geol. Pal., 1889, p. 555.

Lonchocephalus calciferus (Walcott).

Conocephalites calciferus Walcott, 32d Rep. New York State Mus. Nat. Hist., 1880, p. 129.

Ptychoparia calcifera Dwight, Trans. Vassar Bros. Inst., 4, 1887, p. 208.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 831, fig.—Weller, Geol. Surv. New Jersey, Pal., 3, 1903, p. 117, pl. 1, fig. 14.—Walcott, Bull. U. S. Geol. Surv., 30, 1886, p. 21.

Lonchocephalus calciferus Walcott, Smiths. Misc. Coll., 57, 1912, p. 270, pl. 43, figs. 7-10a.

Ozarkian or Upper Cambrian: Saratoga Springs and south of Poughkeepsie, New York (Hoyt); Blairstown, New Jersey (Kittatinny).

Cotypes.—Cat. Nos. 58554-58556, U.S.N.M.

LONCHODOMAS Angelin. See Ampyx subgenus Lonchodomas.

LONCHODOMAS HALLI Billings. See Ampyx (Lonchodomas) halli.

LOPHIOSTROMA Nicholson. Genotype: Labechia? schmidti Nicholson.

Lophiostroma Nicholson, Mon. British Strom., 1891, p. 160 (footnote).

Chalazodes Parks, Univ. Toronto Studies, Geol. Ser., 5, 1908, p. 33, pl. 11, figs. 1-8; ibid., 7, 1910, p. 29. (Genotype: C. granulatum Parks.)

Lophiostroma granulatum (Parks).

Chalazodes granulatum Parks, Univ. Toronto Studies, Geol. Ser., 5, 1908, p. 36, pl. 9, fig. 7; pl. 11, figs. 1, 2, 7, 8.

Lophiostroma granulatum Parks, ibid., 7, 1910, p. 29 (gen. ref.).

Niagaran: Drummond Island, Lake Huron.

Holotype.—Cat. No. 36940, U.S.N.M.

Lophiostroma magnum (Parks).

Chalazodes magnum Parks, Univ. Toronto Studies, Geol. Ser., 5, 1908, p. 38, pl. 9, fig. 8; pl. 10, fig. 8; pl. 11, figs. 5, 6.

Lophiostroma magnum—Continued.

Lophiostroma magnum Parks, ibid., 7, 1910, p. 29 (gen. ref.).

Niagaran: Tehkummah and Assiginack, Manitoulin Island, Point Detour, Lake Huron.

Holotype.—Cat. No. 36941, U.S.N.M.

Lophiostroma romingeri (Parks).

Chalazodes romingeri Parks, Univ. Toronto Studies, Geol. Ser., 5, 1908, p. 41, pl. 14, fig. 2.

Lophiostroma romingeri Parks, ibid., 7, 1910, p. 29 (gen. ref.).

Niagaran: Drift at Ann Arbor, Michigan.

Holotype.—Cat. No. 36813, U.S.N.M.

Lophiostroma spindicandum (Parks).

Chalazodes spindicandum Parks, Univ. Toronto Studies, Geol. Ser., 5, 1908, p. 40, pl, 9, fig. 9; pl. 11, figs. 3, 4.

Lophiostroma spindicandum Parks, ibid., 7, 1910, p. 29 (gen. ref.).

Niagaran (Louisville): Louisville, Kentucky.

Holotype.—Cat. No. 36936, U.S.N.M.

LOPHOSPIRA Whitfield.

Genotypes: Murchisonia bicincta Hall and M. serrulata Salter.

Murchisonia and Pleurotomaria of authors.

Lophospira Whitfield, Amer. Mus. Nat. Hist., 1, 1886, p. 312.—Donald, Quart. Jour. Geol. Soc. London, 43, 1887, p. 618.—Miller, N. A. Geol. Pal., 1889, p. 406.—Koken, Neues Jahrb. f. Min., Geol., Pal., 6, Beilage-Band, 1889, pp. 373, 478.—Donald, Quart. Jour. Geol. Soc. London, 51, 1895, p. 212.—Koken, Neues Jahr. f. Min., Geol., Pal., 1, 1898, pp. 17, 25.—Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, pp. 951–960.—Donald, Quart. Jour. Geol. Soc. London, 58, 1902, p. 332.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 951.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 631.—Dall, Zittel-Eastman Textb. Pal., 2d ed., 1913, p. 525.

Ruedemannia Foerste, Bull. Sci Lab. Denison Univ., 17, 1914, p. 312. (Genotype: Lophospira lirata Ulrich.)

Lophospira abbreviata (Hall).

Murchisonia uniangulata var. abbreviata Hall, Pal. New York, 1, 1847, p. 304, pl. 83, figs. 2a–d.

Lophospira uniangulata var. abbreviata Whitfield and Hovey, Bull. Amer. Mus. Nat. Hist., 11, pt. 1, 1898, p. 52 (gen. ref.).

Ruedemannia abbreviata Foerste, Bull. Sci. Lab. Denison Univ., 17, 1914, p. 311.

Cincinnatian (Pulaski): Turin and Rome, New York.

Lophospira abnormis Ulrich.

Lophospira abnormis Ulrich, Geol. Minnesota, 3, pt. 2, 1897, p. 974, pl. 73, figs. 36–40.

Trenton (Upper): Covington, Kentucky.

Cotypes.—Cat. No. 45885, U.S.N.M.

Lophospira acuminata Ulrich and Scofield.

Lophospira acuminata Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 973, pl. 73, fig. 8.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 966, pl. 40, fig. 15.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 634, fig. 859d.

Murchisonia acuminata Miller, N. A. Geol. Pal., 2d App., 1897, p. 768.

Richmond: Richmond, Indiana (Whitewater); Blanchester, Ohio; Spring Valley, Minnesota (Maquoketa).

Holotype—Cat. No. 45886, U.S.N.M.

Lophospira ampla Ulrich.

Lophospira ampla Ulrich, Geol. Minnesota, 3, pt. 2, 1897, p. 981, pl. 73, figs. 52–54.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 966, pl. 41, figs. 1, 1b.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 635, figs. 860d–e.

Murchisonia ampla Miller, N. A. Geol. Pal., 2d App., 1897, p. 768 (gen. ref.).

Richmond: Richmond, Indiana; Boyle and Lincoln Counties, Kentucky.

Cotypes.—Cat. Nos. 45887, 45888, U.S.N.M.

Lophospira augustina (Billings).

Murchisonia augustina Billings, Pal. Foss., 1, Geol. Surv. Canada, 1, 1865, p. 234, fig. 221.

Lophospira augustina Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 987, pl. 71, figs. 1, 2.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 636, fig. 861.

Chazyan (Quebec—H–N): Pistolet Bay, Burnt Cape, Table Head, and Point Rich, Newfoundland.

Trenton (Stewartville): Stewartville, Minnesota.

Plesiotype.—Cat. No. 45889, U.S.N.M.

Lophospira augustina minnesotensis Ulrich and Scofield.

Lophospira augustina var. minnesotensis Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 988, pl. 71, figs. 3, 4.

Trenton: Stewartville, Minnesota (Stewartville); Ottawa, Ontario.

Cotypes.—Cat. No. 45890, U.S.N.M.

Lophospira? arachne (Billings).

Pleurotomaria Arachne Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 31, fig. 32 (adv. sheets 1862).

Murchisonia Arachne Billings, Geol. Canada, Geol. Surv. Canada, 1863, p. 145, fig. 94.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 426, fig.

Black River (Leray): Pointe Claire, Pauquettes Rapids, and Murray Bay, Canada.

Lophospira aspera (Billings).

Murchisonia asper Billings, Canadian Nat. Geol., 4, 1859, p. 458.

Lophospira aspera Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 963.—Raymond, Ann. Carnegie Mus., 4, 1908, p. 189, pl. 55, fig. 2.

Chazayan (Mingan): Mingan Islands, Canada.

Lophospira beatrice Foerste.

Lophospira beatrice Foerste, Bull. Sci. Lab. Denison Univ., 17, 1914, p. 310, pl. 2, figs. 8a, b.

Richmond: Riviere des Hurons, near Vars, etc., Quebec.

Lophospira bicincta (Hall).

Murchisonia bicincta Hall (not McCoy, 1844), Pal. New York, 1, 1847, p. 177, pl. 38, figs. 5a–5f (?5g, 5h).—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 162, pl. 5, figs. 6a–c, 11.—Rogers, Geol. Pennsylvania, 2, pt. 2, 1858, p. 817, fig. 593.—Miller, Cincinnati Quart. Jour. Sci., 1, 1874, p. 315.—Whitfield, Bull. Amer. Mus. Nat. Hist., 1, 1886, p. 312.

Pleurotomaria bicincta Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 2, 1895, p. 122 (loc. occ.).

Lophospira bicincta Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 964, pl. 72, figs. 1–5.—Ruedemann, Bull. New York State Mus., 49, 1901, p. 30.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 967, pl. 40, figs. 16–16b.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 632, figs. 856a–d.

Lophospira bicincta—Continued.

Murchisonia milleri Hall in Miller, Amer. Pal. Foss., 1897, p. 244.—Walcott, Mon. U. S. Geol. Surv., 8, 1884, p. 79, pl. 1, figs. 12, 12a–b; Amer. Jour. Sci. Arts, 3d ser., 35, 1888, p. 237, figs. 3, 4.—Whitfield, Bull. Amer. Mus. Nat. Hist., 1, 1886, p. 312.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 430, fig.—Whiteaves, Canadian Rec. Sci., 5, 1893, p. 320 (loc. occ.).

Stones River-Richmond: Middleville, Turin, Watertown, etc., New York (Trenton); Murfreesboro, Tennessee (Stones River); Minnesota, Illinois, Wisconsin, and Kentucky (Black River); Spring Valley, etc., Minnesota (Richmond); Nevada (Pogonip), etc.

Plesiotypes.—Cat. Nos. 46062, 47611, 47612, U.S.N.M.

Lophospira billingsi Raymond.

Lophospira billingsi Raymond, Amer. Jour. Sci., 4th ser., 20, 1905, p. 377; Ann. Carnegie Mus., 4, 1908, p. 186, pl. 69, figs. 1, 2.

Chazyan (Aylmer): Aylmer, Quebec.

Lophospira bispiralis (Hall).

Pleurotomaria bispiralis Hall, Pal. New York, 2, 1852, p. 348, pl. 84, figs. 2a, b.—Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 2, 1895, p. 74; Geol. Surv. Canada, Pal. Foss., 3, pt. 4, 1906, p. 335.

Lophospira bispiralis Clarke and Ruedemann, Mem. New York State Mus., 5, 1903, p. 71, pl. 10, figs. 6–9.—Grabau, Michigan Geol. Surv., Geol., 1st ser., p. 190, pl. 23, fig. 16.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 636.

Niagaran (Guelph): Galt, etc., Ontario; Shelby and Rochester, New York.

Upper Monroan (Amherstburg): Detroit River region.

Lophospira bowdeni (Safford).

Murchisonia bowdeni Safford, Geol. Tennessee, 1869, pl. 3 (G), figs. 2a–2c.

Lophospira bowdeni Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 986, pl. 72, figs. 40–43.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, pl. 41, figs. 4–4b.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 635, figs. 862a–c.

Trenton-Richmond: Hartsville, Nashville, etc., Tennessee (Catheys); Ohio Indiana, and Kentucky (Maysville and Richmond).

Plesiotypes.—Cat. No. 45891, U.S.N.M.

Lophospira calcifera Whitfield.

Lophospira Calcifera Whitfield, Bull. Amer. Mus. Nat. Hist., 2, 1889, p. 55, pl. 9, figs. 8, 9.

Murchisonia calcifera Miller, N. A. Geol. Pal., 1889, p. 411 (gen. ref.).

Canadian (Beekmantown): Beekmantown, New York.

Lophospira casii (Meek and Worthen).

Pleurotomaria casii Meek and Worthen, Geol. Surv. Illinois, 3, 1868, p. 359, pl. 5, fig. 5.—Nettelroth, Kentucky Foss. Shells, Geol. Surv. Kentucky, 1889, p. 171, pl. 26, fig. 11.

Niagaran: Bridgeport, near Chicago, Illinois (Racine); Louisville, Kentucky (Louisville).

Plesiotype.—Cat. No. 51341, U.S.N.M.

Lophospira Cassina Whitfield. See Eotomaria? cassina.

Lophospira centralis Ulrich.

Lophospira centralis Ulrich, Geol. Minnesota, 3, pt. 2, 1897, p. 979, pl. 73, fig. 9.

Murchisonia centralis Miller, N. A. Geol. Pal., 2d App., 1897, p. 768 (gen. ref.).

Stones River (Murfreesboro): Murfreesboro, Tennessee.

Holotype.—Cat. No. 46063, U.S.N.M.

Lophospira? chamberlini (Whitfield).
Murchisonia Chamberlini Whitfield, Ann. Rep. Geol. Surv. Wisconsin for 1877, 1878, p. 84; Geol. Wisconsin, 4, 1882, p. 317, pl. 24, fig. 4.
Niagaran (Guelph): Near Carlton, Wisconsin.

Lophospira cicelia (Billings).
Murchisonia Cicelia Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 233, fig. 219.—Koken, Neues Jahrb f. Min., Geol. Pal., 6, Beilage-Band, 1889, p. 368.
Lophospira cicelia Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 963, (gen. ref.).
Chazyan (Quebec—L): Table Head and Point Rich, Newfoundland.

Lophospira? circe (Billings).
Pleurotomaria circe Billings, Geol. Surv. Canada, Rep. Progr. for 1853–6, 1857, p. 303; Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 17 (loc. ref.).
Richmond (English Head): English Head, Anticosti.

Lophospira concinnula Ulrich and Scofield.
Lophospira concinnula Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 966, pl. 72, figs. 16–19.
Black River (Decorah): Minneapolis and Cannon Falls, Minnesota.
Cotypes.—Cat. Nos. 45892, 45893, U.S.N.M.

Lophospira conoidea Ulrich.
Lophospira conoidea Ulrich, Geol. Minnesota, 3, pt. 2, 1897, pl. 73, fig. 22, p. 976.
Murchisonia conoidea Miller, N. A. Geol. Pal., 2d App., 1897, p. 768 (gen. ref.).
Trenton (Catheys): Nashville, Tennessee.
Holotype.—Cat. No. 45894, U.S.N.M.

Lophospira conradana Ulrich and Scofield.
Murchisonia ventricosa Whitfield (not Hall), Geol. Wisconsin, 4, 1882, p. 218, pl. 5, fig. 18.
Lophospira conradana Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 979, pl. 72, figs. 29–32.
Black River (Platteville): Minneapolis and St. Paul, Minnesota; Beloit, Wisconsin.
Cotypes.—Cat. No. 45895, U.S.N.M.

Lophospira conradi (Hall).
Murchisonia conradi Hall, 20th Rep. New York State Cab. Hist., 1868, p. 344, pl. 15 (6), fig. 19; rev. ed., 1870, p. 396, pl. 15, fig. 19.—Chamberlin, Geol. Wisconsin, 1, 1883, p. 193, fig.—Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 1, 1884, p. 27; pl. 4, fig. 6; ibid., 3, pt. 2, 1895, p. 80.—Teller, Trans. Wisconsin Acad. Sci. Arts and Letters, 16, pt. 2, 1910, p. 1287, pl. 150.
Lophospira Conradi (Ulrich) Whiteaves, Geol. Surv. Canada, Pal. Foss., 3, pt. 4, 1906, p. 331, (gen. ref.).
Niagaran: Racine, Wisconsin (Racine); Elora, Ontario (Guelph).

Lophospira decursa Ulrich.
Lophospira decursa Ulrich, Geol. Minnesota, 3, pt. 2, 1897, p. 975, pl. 73, fig. 10.
Trenton (Wilmore?): Burgin, Kentucky.
Holotype.—Cat. No. 45896, U.S.N.M.

Lophospira elevata Ulrich and Scofield.
Lophospira elevata Ulrich and Scofield, Geol. Minnesota, 3, 1897, p. 977, pl. 73, figs. 11–14.

Lophospira elevata—Continued.
Murchisonia elevata Miller, N. A. Geol. Pal , 2d App., 1897, p. 768 (gen. ref.).
Trenton: Decorah, Iowa; Kenyon, etc., Goodhue County, Minnesota (Prosser); Mercer County, Kentucky (Flanagan).
Cotypes.—Cat. Nos. 45897, 45898, U.S.N.M.

Lophospira fasciata Savage.
Lophospira fasciata Savage, Bull. Geol. Surv. Illinois, 23, 1913, p. 97, pl. 6, figs. 7 and 8.
Upper Medinan (Edgewood): Pike County, Missouri.

Lophospira fillmorensis Ulrich and Scofield.
Lophospira fillmorensis Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, pl. 72, figs. 20–24.
Trenton (Prosser): Wykoff and Fountain, Fillmore County, Minnesota.
Cotypes.—Cat. Nos. 45899, 45900, U.S.N.M.

Lophospira guelphica Whiteaves.
Murchisonia sp. Whiteaves, Geol. Surv. Canada, Pal. Foss., 3, pt. 2, 1895, p. 79, pl. 12, fig. 3.
Lophospira Guelphica Whiteaves, ibid., pt. 4, 1906, p. 331.
Niagaran (Guelph): Durham, Ontario.

Lophospira hammelli (Miller).
Murchisonia hammelli Miller, 18th Ann. Rep. Indiana Dep. Nat. Res., 1894, p. 319, pl. 9, figs. 41, 42 (adv. sheets, 1892).
Lophospira hammelli Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 969, pl. 41, figs. 3, 3a.
Richmond (Whitewater—Saluda): Madison, Indiana.

Lophospira helicteres (Salter).
Murchisonia helicteres Salter, Geol. Surv. Canada, dec. 1, 1859, p. 21, pl. 4, figs. 2–4.—Whitfield, Geol. Wisconsin, 4, 1882, p. 220, pl. 5, fig. 17.—Chamberlin, Geol. Wisconsin, 1, 1883, p. 157, fig.—Whitfield, Bull. Amer. Mus. Nat. Hist., 1, 1886, p. 312.
Lophospira helicteres Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 632, fig. 857.
Black River: Allumette Island, Ottawa River, Canada (Leray); Mercer County, Kentucky; Wisconsin.

Lophospira helicteres wisconsinensis Ulrich and Scofield.
Lophospira helicteres var. wisconsinensis Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 971, pl. 72, figs. 25–28.—Grabau, Amer. Nat., 36, 1902, p. 939, fig. 14.
Lophospira wisconsinensis Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 633, fig. 858.
Black River (Platteville): Minneapolis, Minnesota; Beloit, Wisconsin; Dixon, Illinois.
Cotypes.—Cat. Nos. 45901, 45902, U.S.N.M.
Observation.—See L. tricarinata Hall.

Lophospira? hermione (Billings).
Murchisonia Hermione Billings, Pal. Foss., Geol. Surv. Canada, 1, 1865, p. 33, figs. 34, 35 (adv. sheets 1862).—Raymond, Ann. Carnegie Mus., 4, 1908, p. 217.
Pleurotomaria Hermione Koken, Neues Jahrb. f. Min., Geol., Pal., 6 Beilage-Band, 1889, p. 335.
Canadian(?): South point of Large Island, Mingan Islands, Canada.

Lophospira hespelerensis (Whiteaves).
Murchisonia Hespelerensis Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 1, 1884, p. 24, pl. 4, fig. 3; ibid., 3, pt. 2, 1895, p. 79 (loc. occ.).
Lophospira Hespelerensis (Ulrich) Whiteaves, ibid., 3, pt. 4, 1906, p. 331 (gen. ref.).
Niagaran (Guelph): Hespeler and Glenelg, Ontario.

Lophospira humilis Ulrich.
Lophospira humilis Ulrich, Geol. Minnesota, 3, pt. 2, 1897, p. 968, pl. 72, figs. 12–15.
Murchisonia humilis Miller, N. A. Geol. Pal., 2d App., 1897, p. 768 (gen. ref.).
Trenton: Mercer and Boyle Counties, Kentucky (Flanagan); Hartsville, Tennessee (Catheys).
Cotypes.—Cat. No. 45903, U.S.N.M.

Lophospira jessica (Billings).
Murchisonia Jessica Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 189, fig. 170.
Ozarkian? (Levis—erratics): Point Levis, Quebec.

Lophospira(?) knoxvillensis (Ulrich).
Lophospira(?) knoxvillensis Ulrich, Geol. Minnesota, 3, pt. 2, 1897, p. 989, pl. 65, figs. 38–40.
Trochonema knoxvillensis Miller, N. A. Geol. Pal., 2d App., 1897, p. 770 (gen. ref.).
Chazyan (Lenoir): Near Knoxville, Tennessee
Cotypes.—Cat. No. 46064, U.S.N.M.

Lophospira (?Seelya) lirata Ulrich.
Lophospira (?Seelya) lirata Ulrich, Geol. Minnesota, 3, pt. 2, 1897, p. 988, pl. 72, figs. 56–59.
Murchisonia lirata Miller, N. A. Geol. Pal., 2d App., 1897, p. 768 (gen. ref.).
Ruedemannia lirata Foerste, Bull. Sci. Lab. Denison Univ., 17, 1914, p. 312.
Eden (Economy, Southgate): Cincinnati, Ohio, and vicinity.
Holotype.—Cat. No. 45904, U.S.N.M.

Lophospira (?Seelya) lirata obsoleta Ulrich.
Lophospira (?Seelya) lirata var. obsoleta Ulrich, Geol. Minnesota, 3, pt. 2, 1897, p. 989.
Eden (Economy, Southgate): Cincinnati, Ohio, and vicinity.
Holotype.—Cat. No. 45905, U.S.N.M.

Lophospira medialis Ulrich and Scofield.
Lophospira medialis Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 973, pl. 73, figs. 23–29.—Weller, Geol. Surv. New Jersey, Pal., 3, 1903, p. 181, pl. 12, fig. 28.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 634, figs. 859e–h.—Bassler, Bull. Virginia Geol. Surv., 2a, 1909, p. 183, figs. 20, 1–4.
Murchisonia medialis Miller, N. A. Geol. Pal., 2d App., 1897, p. 768 (gen. ref.).
Trenton: St. Paul, Wykoff, etc., Minnesota (Prosser); Burgin and Danville, Kentucky (Flanagan); Tennessee; Virginia; New Jersey; etc.
Cotypes.—Cat. Nos. 45906, 45907, U.S.N.M.

Lophospira medialis burginensis Ulrich.
Lophospira medialis var. burginensis Ulrich, Geol. Minnesota, 3, pt. 2, 1897, p. 974, pl. 73, figs. 30, 31.
Trenton (Flanagan): Burgin, Danville, Lexington, etc., Kentucky.
Cotypes.—Cat. No. 45908, U.S.N.M.

Lophospira modesta (Billings).

Murchisonia modesta Billings, Geol. Surv. Canada, Rep. Progr. for 1853-6, 1857, p. 229; Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 18 (loc. ref.).

Lophospira modesta Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 962 (gen. ref.).

Richmond (English Head, Charleton): English Head, etc., Anticosti.

LOPHOSPIRA MULTIGRUMA Ulrich and Scofield. See Lophospira tropidophora.

Lophospira mylitta (Billings).

Murchisonia Mylitta Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 157, fig. 140.—Koken, Neues Jahrb. f. Min., Geol., Pal., 6, Beilage-Band, 1889, p. 368.—Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 2, 1895, p. 79.

Lophospira Mylitta (Ulrich) Whiteaves, Geol. Surv. Canada, Pal. Foss., 3, pt. 4, 1906, p. 331 (gen. ref.).

Niagaran (Guelph): Elora, Ontario; Wisconsin.

Lophospira(?) notabilis Ulrich.

Lophospira(?) notabilis Ulrich, Geol. Minnesota, 3, pt. 2, 1897, p. 990, pl. 72, figs. 33-35.

Trochonema notabile Miller, N. A. Geol. Pal., 2d App., 1897, p. 770 (gen. ref.).

Black River (Lowville): Maury County, Tennessee; Mercer County, Kentucky; Watertown, New York.

Holotype.—Cat. No. 45909, U.S.N.M.

Lophospira obliqua Ulrich.

Murchisonia bicincta Salter (not Hall, 1847), Geol. Surv. Canada, Canada Org. Rem., dec. 1, 1859, p. 19.

Lophospira obliqua Ulrich, Geol. Minnesota, 3, pt. 2, 1897, p. 965, pl. 72, figs. 6-8.

Black River: High Bridge, Kentucky; Watertown, New York (Lowville); Lincoln County, Missouri (Auburn).

Cotypes.—Cat. No. 45910, U.S.N.M.

Lophospira ohioensis (James). Not recognizable.

Pleurotomaria trilineata James, Cat. Low. Sil. Foss. Cincinnati Group, 1875, p. 6 (nom. nud. preoccupied).

Pleurotomaria Ohioensis James, Paleontologist, No. 2, 1878, p. 12.

Lophospira ohioensis Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 950 (gen. ref.).

Eden: Cincinnati, Ohio.

Lophospira oweni Ulrich and Scofield.

Lophospira oweni Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 980, pl. 73, figs. 41-45.—Weller, Geol. Surv. New Jersey, Pal. 3, 1903, p. 181, pl. 12, fig. 34.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 634, fig. 860a-c.

Murchisonia oweni Miller, N. A. Geol. Pal., 2d App., 1897, p. 768 (gen. ref.).

Black River: High Bridge, Kentucky (Lowville); St. Paul, Cannon Falls, etc., Minnesota (Decorah); Poland and Watertown, New York; Lincoln County, Missouri; New Jersey.

Cotypes.—Cat. Nos. 45911, 45912, U.S.N.M.

Lophospira? papillosa (Billings).

Murchisonia papillosa Billings, Geol. Surv. Canada, Rep. Progr. for 1853-56, 1857, p. 301; Cat. Sil. Fossils, Anticosti, Geol. Survey Canada, 1866, p. 55 (loc. ref.).

Gamachian (Ellis Bay): Gamache Bay, Anticosti.

Lophospira peracuta Ulrich and Scofield.

Lophospira peracuta Ulrich and Scofield, Geol. Minnesota, 3, 1897, p. 976, pl. 73, figs. 15–17.

Murchisonia peracuta Miller, N. A. Geol. Pal., 2d App., 1897, p. 768 (gen. ref.).

Stones River (Lebanon): Lebanon, Tennessee.

Black River (Decorah): St. Paul, Minnesota.

Cotypes.—Cat. Nos. 46065, 46066, U.S.N.M.

Lophospira perangulata (Hall).

Murchisonia perangulata Hall, Pal. New York, 1, 1847, p. 41, pl. 10, fig. 4 (not p. 179, pl. 38, figs. 7a, b).—Billings, Canadian Nat. Geol., 4, 1859, p. 458.—Koken, Neues Jahrb. f. Min., Geol. Pal., 6, Beilage-Band, 1889, p. 368.

Murchisonia bicincta var. perangulata Salter, Canadian Organic Remains, dec. 1, 1859, p. 19, pl. 4, fig. 7.

Lophospira perangulata Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 972, pl. 63, figs. 1–7.—Ruedemann, Bull. New York State Mus., 49, 1901, p. 31.—Raymond, Ann. Carnegie Mus., 4, 1908, p. 188, pl. 49, figs. 7, 8.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 633, figs. 859a–c.—Bassler, Bull. Virginia Geol. Surv., 2a, 1909, pl. 3, figs. 9–13.

Black River: Watertown, New York; Minnesota; Kentucky; Tennessee; Virginia; Canada (Lowville); Lincoln County, Missouri (Auburn).

Stones River (Murfreesboro): Murfreesboro, Tennessee.

Chazyan: Valcour Island and Chazy, New York.

Plesiotypes.—Cat. No. 46067, U.S.N.M.

Lophospira perforata Ulrich and Scofield.

Murchisonia bicincta? Meek and Worthen (not Hall, 1847), Geol. Surv. Illinois, 3, 1868, p. 317, pl. 3, fig. 4.

Lophospira perforata Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 984, pl. 73, figs. 32–35.

Trenton: Jo Daviess and Carroll Counties, Illinois; Fountain, Minnesota; Jefferson County, New York.

Cotypes.—Cat. Nos. 45913, 45914, U.S.N.M.

Lophospira perlamellosa Ulrich.

Lophospira perlamellosa Ulrich, Geol. Minnesota, 3, pt. 2, 1897, p. 985, pl. 73, figs. 55, 56.

Murchisonia perlamellosa Miller, N. A. Geol. Pal., 2d App., 1897, p. 768 (gen. ref.).

Richmond (Waynesville): Hanover, Butler County, Ohio.

Holotype.—Cat. No. 45915, U.S.N.M.

Lophospira procera Ulrich.

Lophospira procera Ulrich, Geol. Minnesota, 3, pt. 2, 1897, p. 968, pl. 72, fig. 9.

Stones River (Murfreesboro): Murfreesboro, Tennessee.

Holotype.—Cat. No. 46068, U.S.N.M.

Lophospira producta Ulrich.

Lophospira producta Ulrich, Geol. Minnesota, 3, pt. 2, 1897, p. 976, pl. 73, fig. 21.

Trenton (Catheys): Nashville, Tennessee.

Holotype.—Cat. No. 45916, U.S.N.M.

Lophospira pulchella Ulrich and Scofield.

Lophospira pulchella Ulrich and Scofield, Geol. Minnesota, 3, 1897, p. 982, pl. 73, figs. 46–48.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 634, figs. 859i–k.

Lophospira pulchella—Continued.
Trenton (Flanagan): Burgin, Danville, etc., Kentucky. Black River (Decorah): Near Cannon Falls, Minnesota. Richmond: Spring Valley, Minnesota.
Cotypes.—Cat. Nos. 45917, 45918, U.S.N.M.

Lophospira quadrisulcata Ulrich and Scofield.
Lophospira quadrisulcata Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, pl. 72, figs. 10–11.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 632, figs. 856e–f.
Murchisonia quadrisulcata Miller, N. A. Geol. Pal., 2d App., 1897, p. 768 (gen. ref.).
Richmond (Maquoketa): Spring Valley, etc., Minnesota.
Holotype.—Cat. No. 45919, U.S.N.M.

LOPHOSPIRA RECTANGULARIS Raymond. See Trochonema rectangulare.

Lophospira rectistriata Raymond.
Lophospira subabbreviata Raymond (not D'Orbigny), Ann. Carnegie Mus., 3, 1906, p. 501.
Lophospira rectistriata Raymond, ibid., 4, 1908, p. 187, pl. 69, figs. 3–6.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 632, fig. 855.
Chazyan (Day Point, Crown Point): Crown Point, Valcour Island, and Chazy, New York.

Lophospira saffordi Ulrich.
Lophospira saffordi Ulrich, Geol. Minnesota, 3, pt. 2, 1897, p. 982, pl. 73, figs. 49–51.
Murchisonia saffordi Miller, N. A. Geol. Pal., 2d App., 1897, p. 768 (gen. ref.).
Trenton (Catheys): Near Nashville, Tennessee.
Cotypes.—Cat. Nos. 45920, 45921, U.S.N.M.

Lophospira seelyi Raymond.
Lophospira seelyi Raymond, Ann. Carnegie Mus., 4, 1908, p. 190, pl. 55, fig. 3.
Chazyan (Valcour): Isle La Motte, Vermont.
Holotype.—Cat. No. 53632, U.S.N.M.

Lophospira serrulata (Salter).
Murchisonia tricarinata Hall, Pal. New York, 1, 1847, p. 178, pl. 38, fig. 6c (not 6a, b).—Whitfield, Geol. Wisconsin, 4, 1882, p. 219, pl. 5, fig. 16.
Murchisonia helicteres (part) Whitfield (not Salter, 1859), Geol. Wisconsin, 4, 1882, p. 220.
Murchisonia serrulata Salter, Geol. Surv. Canada, dec. 1, 1859, p. 20, pl. 4, fig. 1.—Hall, Rep. Geol. Surv. Wisconsin, 1862, p. 439.—Billings, Geol. Canada, Geol. Surv. Canada, 1863, p. 145, fig. 93.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 430, fig.
Lophospira serrulata Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 968, pl. 72, figs. 51–55; pl. 73, fig. 57.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 636, figs. 862d–f.—Bassler, Bull. Virginia Geol. Surv., 2a, 1909, pl. 3, fig. 8.
Black River: Mineral Point, etc., Wisconsin; St. Paul., etc., Minnesota; Dixon, Illinois (Platteville); Pauquette Rapids, etc., Canada; Virginia; Tennessee.
Plesiotypes.—Cat. Nos. 45922–45925, U.S.N.M.

Lophospira sororcula (Billings).
Murchisonia sororcula Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 233, fig. 220.

Lophospira sororcula—Continued.
Lophospira sororcula Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 962 (gen. ref.).
Chazyan (Quebec—H-M): Table Head and Point Rich, Newfoundland.

Lophospira spironema Ulrich and Scofield.
Lophospira spironema Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 983, pl. 72, figs. 44–47.—Schuchert, Proc. U. S. Nat. Mus., 22, 1900, p. 165.
Murchisonia spironema Miller, N. A. Geol. Pal., 2d App., 1897, p. 768 (gen. ref.).
Black River: Chatfield and Cannon Falls, Minnesota (Decorah); Lincoln County, Missouri (Auburn); Baffin Land.
Cotypes.—Cat. Nos. 45926, 45927, U.S.N.M.

Lophospira subabbreviata (D'Orbigny). Not recognized.
Murchisonia abbreviata Hall (not DeKoninck, 1841), Pal. New York, 1, 1847, p. 32, pl. 6, fig. 7.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 162, pl. 4, fig. 11; pl. 5, fig. 13; Man. Geol., 1860, p. 98, fig. 87.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 424, fig.
Murchisonia decurta Hall in Miller's N. A. Pal. Foss., 1877, p. 244.
Murchisonia subabbreviata D'Orbigny, Prodrome Pal., 1, 1850, p. 8.
Lophospira subabbreviata Raymond, Ann. Carnegie Mus., 4, 1908, p. 186.
Chazyan: Chazy, New York.

LOPHOSPIRA SUBABBREVIATA Raymond. See Lophospira rectistriata.

Lophospira sumnerensis (Safford).
Murchisonia sumnerensis Safford, Geol. Tennessee, 1869, pl. 3G, figs. 1a–f.
Lophospira sumnerensis Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 978, pl. 73, figs. 18–20.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 635, figs. 860i–j.
Trenton: Nashville, etc., Tennessee (Catheys); Mercer and Boyle Counties, Kentucky (Flanagan); Wykoff, Minnesota (Prosser).
Cotypes and *plesiotypes.*—Cat. No. 45928, U.S.N.M.

Lophospira sybillina (Billings).
Pleurotomaria Sybillina Billings, Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 54, fig. 19.
Gamachian (Ellis Bay): Junction Cliff, Anticosti.

Lophospira tenuistriata Ulrich.
Lophospira tenuistriata Ulrich, Geol. Minnesota, 3, pt. 2, 1897, p. 983, pl. 72, figs. 48–50.
Eden (Southgate): Cincinnati, Ohio, and vicinity.
Cotypes.—Cat. No. 45929, U.S.N.M.

Lophospira thebesensis Savage.
Lophospira thebesensis Savage, Bull. Geol. Surv. Illinois, 23, 1913, p. 97, pl. 5, fig. 31.
Upper Medinan (Edgewood): Near Thebes, Illinois; Louisiana and near Edgewood, Missouri.

Lophospira tricarinata (Hall).
Murchisonia tricarinata Hall (part), Pal. New York, 1, 1847, p. 178, pl. 38, figs. 6a, 6b (not 6c).
Murchisonia cf. tricarinata Sardeson, Bull. Minnesota Acad. Nat. Sci., 4, 1896, p. 75.

Lophospira tricarinata—Continued.

Lophospira tricarinata Whitfield and Hovey, Bull. Amer. Mus. Nat.Hist., 11, pt. 1, 1898, p. 52 (gen. ref.).

Black River (Platteville): Mineral Point, Wisconsin.

Observation.—Probably the same as L. helicteres wisconsinensis.

Lophospira(?) trochonemoides Ulrich.

Lophospira(?) trochonemoides Ulrich, Geol. Minnesota, 3, pt. 2, 1897, p. 990, pl. 65, figs. 41–44.

Stones River (Murfreesboro): Murfreesboro, Tennessee.

Holotype.—Cat. No. 46069, U.S.N.M.

Lophospira tropidophora (Meek).

Pleurotomaria (Scalites?) tropidophora Meek, Amer. Jour. Sci., 3d ser., 4, 1872, p. 278; Geol. Surv. Ohio, Pal., 1, 1873, p. 154, pl. 13, figs. 6a–c.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 719, figs.

Pleurotomaria tropidophora Miller, Cincinnati Quart. Jour. Sci., 1, 1874, p. 317.

Lophospira tropidophora Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, pl. 72, figs. 36–39.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 969, pl. 41, figs. 2–2d.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 635, figs. 860f–h.

Murchisonia multigruma Miller, Jour. Cincinnati Soc. Nat. Hist., 1, 1878, p. 104, pl. 3, figs. 3–3a.

Lophospira multigruma Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 978.

Eden-Richmond: Cincinnati, Ohio, and vicinity; Richmond, etc., Indiana; Kentucky; Tennessee.

Plesiotypes.—Cat. Nos. 45930–45932, U.S.N.M.

Lophospira uniangulata (Hall).

Murchisonia uniangulata Hall, Pal. New York, 1, 1847, p. 179, pl. 28, fig. 8.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 162.

Lophospira uniangulata Whitfield and Hovey, Bull. Amer. Mus. Nat. Hist., 11, pt. 1, 1898, p. 52 (gen. ref.).

Trenton: Middleville, New York.

LOPHOSPIRA UNIANGULATA ABBREVIATA Whitfield and Hovey. See Lophospira abbreviata.

Lophospira varians (Billings).

Murchisonia varians Billings, Geol. Surv. Canada, Rep. Progr. for 1853–6, 1857, p. 300; Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 18 (loc. ref.).

Richmond (English Head): English Head, Anticosti.

Lophospira ventricosa (Hall).

Murchisonia ventricosa Hall, Pal. New York, 1, 1847, p. 41, pl. 10, fig. 3.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 162.—Billings(?), Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, pp. 18, 55 (loc. ref.).

Black River (Amsterdam): Tribes Hill, Mohawk Valley, New York.

LOPHOSPIRA WISCONSINENSIS Grabau and Shimer. See Lophospira helicteres wisconsinensis.

Lophospira xanthippe (Billings).

Murchisonia Xanthippe Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 155, fig. 137 (adv. sheets 1862).—Koken, Neues Jahrb. f. Min., Geol., Pal., 6 Beilage-Band, 1889, p. 368.—Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 2, 1895, p. 80 (loc. occ.).

Lophospira xanthippe—Continued.
Lophospira Xanthippe (Ulrich) Whiteaves, Geol. Surv. Canada, Pal. Foss., 3, pt. 4, 1906, p. 331 (gen. ref.).
Niagaran (Guelph): Galt, Ontario.

LOXOCERAS McCoy. Genotype: Orthoceras (Loxoceras) breynii Martin.
Loxoceras McCoy, Syn. Carb. Foss., 1844, p. 8.—Zittel, Handb. Pal., 2, 1884, p. 369.—Hyatt, Zittel-Eastman Textb. Pal., 1, 1900, p. 527; 2d ed., 1913, p. 608.—Ruedemann, Bull. New York State Mus., 90, 1906, p. 486.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 113.
Sactoceras Hyatt, Proc. Boston Soc. Nat. Hist., 22, 1884, p. 273—Foord, Cat. Foss. Ceph. British Mus., 1, 1888, p. 207. (Genotype: Orthoceras richteri Barrande.)

Loxoceras allumettense (Billings).
Orthoceras allumettense Billings, Geol. Surv. Canada, Rep. Progr. for 1853-56, 1857, p. 331; Canadian Nat. Geol., 4, 1859, p. 463; Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 254.—Barrande, Syst. Sil. du Centre Boheme, 2, pt. 3, 1874, p. 729, pl. 437, figs. 6-9.
Actinoceras Allumettense Whiteaves, Trans. Roy. Soc. Canada, 9, sec. 4, 1892, p. 85, pl. 10, figs. 3, 3a; Pal. Foss., Geol. Surv. Canada, 3, pt. 3, 1897, p. 209.
Black River (Leray): Pauquette's Rapids, Ottawa River, etc., Canada.
Chazyan (Quebec—M, N): Table Head, Point Rich, and Pistolet Bay, Newfoundland.

Loxoceras diffidens (Billings).
Orthoceras diffidens Billings, Pal. Foss, 1, Geol. Surv. Canada, 1865, p. 174.
Chazyan (Mingan): Mingan Islands, Canada.
Observation.—Probably the same as Loxoceras moniliforme.

Loxoceras milleri (Foerste).
Orthoceras (Loxoceras) milleri Foerste, Bull. Sci. Lab. Denison Univ., 16, 1910, p. 76, pl. 1, 1910, fig. 5; pl. 2, figs. 24a, b.
Trenton (Perryville): Seven miles south of Frankfort, Kentucky.

Loxoceras moniliforme (Hall).
Orthoceras moniliforme Hall, Pal. New York, 1, 1847, p. 35, pl. 7, fig. 5.
Ormoceras moniliforme Hall, Pal. New York, 1, 1847, p. 315.
Loxoceras moniliforme Ruedemann, Bull. New York State Mus., 90, 1906, p. 487, pl. 34, figs. 6-9.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 113, fig. 1346.
Orthoceras subarcuatum Hall, Pal. New York, 1, 1847, pl. 7, fig. 3 (apical part of type specimen) (see also Spyroceras clintoni Miller).
Orthoceras subarcuatum Emmons, Amer. Geology, 1, pt. 2, 1855, p. 149.—Billings, Canadian Nat. Geol., 4, 1859, p. 462.
Chazyan (Crown Point, Valcour): Chazy and Plattsburg, New York.

LOXONEMA Phillips. Genotype: L. sinuata Phillips.
Loxonema Phillips, Pal. Foss. Cornwall, Devon and W. Somerset, 1841, p. 98.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 163.—Salter, Geol. Surv. Canada, dec. 1, 1859, p. 24, 30.—Meek and Worthen, Proc. Acad. Nat. Sci. Philadelphia, 1860, p. 464; Geol. Surv. Illinois, 2, 1866, p. 377.—Hall, Pal. New York, 5, pt. 2, 1879, p. 39.—Koninck, Ann. Mus. Roy. Hist. Nat. de Belgique, 6, 1881, p. 39.—Lindstrom, Kongl. Sven Vet. Akad. Handl., 19, No. 6, 1881, p. 141.—Zittel, Handb. Pal., 2, 1882, p. 238.—Walcott, Mon. U. S. Geol. Surv., 8, 1884, p. 190.—Nettelroth, Kentucky, Foss. Shells, Geol. Surv. Kentucky, 1889, p. 177.—Koken, Neues Jahrb. Min., Geol. Pal., 6, Beilage-

LOXONEMA—Continued.

Band, 1889, p. 440.—Miller, N. A. Geol. Pal., 1889, p. 406.—Whidborne, Mon. Dev. Fauna South England, 1, Pal. Soc., 1891, p. 172.—Koken, Die Leitfossilien, Leipzig, 1896, p. 108.—Grabau, Bull. Buffalo Soc. Nat. Sci., 6, 1899, p. 275.—Pilsbry, Zittel-Eastman Textb. Pal., 1, 1900, p. 456.

LOXONEMA ACULEATUM Billings. See Hormotoma? aculeata.

Loxonema boydi Hall.

Loxonema Boydii Hall, Geol. New York, 4, 1843, p. 137, fig. 3; p. 138; tab. ill., 25, fig. 3.—Owen, Amer. Jour. Sci. Arts, 2d ser., 1, 1846, fig. 3.—Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 2, 1895, p. 86.

Murchisonia boydii Hall, Pal. New York, 2, 1852, p. 346, pl. 83, fig. 3.—Billings, Geol. Canada, Geol. Surv. Canada, 1863, p. 339, fig. 345.—Chamberlin, Geol. Wisconsin, 1, 1883, p. 193, fig.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 427, figs.

Niagaran (Guelph): Near Newark, Wayne County, New York; Galt, Hespeler, and Durham, Ontario.

Loxonema fitchi Hall.

Loxonema fitchi Hall, Pal. New York, 3, 1859, p. 296, pl. 54, figs. 9, 11a, 11b.—Ohern Geol. Surv. Maryland, Low. Dev., 1913, p. 467, pl. 79, fig. 7.—Holtedahl, 2d Arct. Exp. "Fram", 1898-1902, No. 32, 1914, p. 31, pl. 8, fig. 10.

Cayugan (Manlius): Carlisle, Schoharie and Albany Counties, New York; Maryland.

Helderbergian (Lower beds): Southwestern Ellesmereland, Arctic America.

Loxonema leda Hall.

Loxonema leda Hall, 20th Rep. New York Mus. Nat. Hist., 1868, p. 367, pl. 15 (6), fig. 2; rev. ed., p. 398, pl. 15, fig. 2.

Niagaran (Racine): Wauwatosa, Wisconsin; Bridgeport, Illinois.

LOXONEMA MAGNUM Whiteaves. See Hormotoma whiteavesii.

Loxonema?? magnum Whitfield.

Loxonema magna Whitfield, Ann. Rep. Geol. Surv. Wisconsin, 1878, p. 83; Geol. Wisconsin, 4, 1882, p. 317, pl. 24, fig. 1.

Niagaran (Guelph): Carlton Township, Wisconsin.

Loxonema mcclintocki Haughton.

Loxonema McClintocki Haughton, Jour. Geol. Soc. Dublin, 1, 1857, p. 239, pl. 5, figs. 2, 5.

Niagaran: Port Leopold, North East Cape, Arctic America.

Loxonema? murrayanum Salter.

Loxonema Murrayana Salter, Geol. Surv. Canada, dec. 1, 1859, p. 31, pl. 6, fig. 6.

Black River (Leray): Pauquettes Rapids, Ottawa River, Canada.

Loxonema parvum Grabau.

Loxonema parva Grabau, Michigan Geol. Surv., Geol., 1st ser., 1909, p. 176, pl. 16, fig. 6.

Upper Monroan (Lucas): Salt shaft, Detroit, Michigan.

Loxonema rossi Haughton.

Loxonema Rossi Haughton, Jour. Geol. Soc. Dublin, 1, 1859, p. 239, pl. 5, figs. 6, 8-11.

Niagaran: Beechy Island, Arctic America.

Loxonema rugosum (Billings).
Murchisonia rugosa Billings, Geol. Surv. Canada, Rep. Progr. for 1853-6, 1857, p. 299; Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, pp. 18, 55 (loc. ref.).
Hormotoma rugosa Schuchert and Twenhofel, Bull. Geol. Soc. America, 21, 1910, p. 703.
Gamachian (Ellis Bay): Gamache Bay, Anticosti.

Loxonema salteri Haughton.
Murchisonia sp. Salter, App. to Sutherland's Jour. Voyage Baffin Bay and Barrow Strait, 1852, pl. 5, fig. 18.
Loxonema salteri Haughton, Jour. Roy. Soc. Dublin, 3, 1860, p. 55.
Niagaran: Cornwallis Island, Assistance Bay, etc., Arctic America.

LOXONEMA SUBELONGATA Emmons. See Subulites elongatus.

LOXONEMA SUBFUSIFORMIS D'Orbigny. See Fusispira subfusiformis.

LOXONEMA SUBULATA Conrad. See Hormotoma subulata and Murchisonia sublata.

LOXONEMA VITTATA D'Orbigny. See Fusispira vittata.

Loxonema winnipegense Whiteaves.
Loxonema Winnipegense Whiteaves, Canadian Rec. Sci., 5, 1893, p. 326, fig.; Pal. Foss., Geol. Surv. Canada, 3, pt. 3, 1897, p. 200, fig. 12.
Black River or Richmond: Lake Winnipeg, Manitoba.

LOXOPLOCUS Fischer. Genotype: Murchisonia solutus Whiteaves.
Loxoplocus Fischer, Manual Conch., 1885, p. 847.

Loxoplocus solutus (Whiteaves).
Murchisonia soluta Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 1, 1884, p. 28, pl. 4, figs. 8, 8a.
Murchisonia tropidophora Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 1, 1884, p. 29, pl. 7, figs. 5, 5a.
Loxoplocus solutus Fischer, Manual Conch., etc., 1885, p. 847.—Whiteaves, Geol. Surv. Canada, Pal. Foss., 3, pt. 2, 1895, p. 84, pl. 12, figs. 7, 8.
Niagaran (Guelph): Galt, Hespeler, etc., Ontario.

LUMBRICONEREITES Ehlers. Genotype: L. deperditus Ehlers.
Lumbriconereites Ehlers, Palæontographica, 17, 1868, p. 159.—Hinde, Quart. Jour. Geol. Soc. London, 35, 1879, p. 380.—Zittel, Handb. Pal., 1, 1880, p. 566.—Miller, N. A. Geol. Pal., 1889, p. 518.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 242.

Lumbriconereites armatus Hinde.
Lumbriconereites armatus Hinde, Quart. Jour. Geol. Soc. London, 35, 1879, p. 383, pl. 20, fig. 6.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 242, fig. 1529c.
Upper Medinan (Cataract): Toronto, Ontario.

Lumbriconereites austini Foerste.
Lumbriconereites austini Foerste, Amer. Geol., 2, 1888, p. 417, fig. 4; Geol. Surv. Ohio, Pal., 7, 1893, p. 517, fig. 4.
Richmond (Elkhorn): Todds Fork, near Wilmington, Ohio.

Lumbriconereites basalis Hinde.

Lumbriconereites basalis Hinde, Quart. Jour. Geol. Soc. London, 35, 1879, p. 383, pl. 19, fig. 22.—Grabau and Shimer, N. A. Index Fossils, 1910, 2, p. 242, fig. 1532b.

Upper Medinan (Cataract): Toronto, Ontario.

Lumbriconereites dactylodus Hinde.

Lumbriconereites dactylodus Hinde, Quart. Jour. Geol. Soc. London, 35, 1879, p. 380, pl. 18, fig. 20.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 242, fig. 1527b.

Cincinnatian (Pulaski): Toronto, Ontario.

LUMBRICONEREITES PERDENTATUS Hinde. See Eunicites perdentatus.

Lumbriconereites triangularis Hinde.

Lumbriconereites triangularis Hinde, Quart. Jour. Geol. Soc. London, 35, 1879, p. 383, pl. 20, fig. 4.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 242, fig. 1529a.

Upper Medinan (Cataract): Toronto, Ontario.

LUNULITES? DACTIOLOIDES Owen. See Cerionites dactyloides.

LYELLIA Edwards and Haime. Genotype: L. americana Edwards and Haime.

Lyellia Edwards and Haime, Mon. d. Polyp. Foss. d. Terr. Pal., 1851 (Arch. du Mus. d'Hist. Nat., 5), pp. 150, 226.—Pictet, Traite de Pal., 2d ed., 4, 1857, p. 439.—Milne Edwards, Hist. Nat. d. Corall., 3, 1860, p. 242.—Duncan, Rep. 41st Meeting British Assoc. Adv. Sci., 1872, p. 127.—Rominger, Geol. Surv. Michigan, 3, pt. 2, 1876, p. 15.—Nicholson, Tab. Corals Pal. Period, 1879, p. 249.—Zittel, Handb. Pal., 1, 1879, p. 213.—Roemer, Leth. geog., pt. 1, Leth. Pal., 1883, p. 514.—Miller, N. A. Geol. Pal., 1889, p. 195.—Sardeson, Neues Jahrb. f. Min., Geol., Pal., Beilage-Band 10, 1889, p. 280.—Lindström, Kongl. Sven. Vet.-Akad. Handl., 32, No. 1, p. 72.—Lambe, Cont. Can. Pal., Geol. Surv. Canada, 4, pt. 1, 1899, p. 83.—Kiär, Palæontographica, 46, 1899, p. 56.—Grabau and Shimer, N. A. Index Fossils, 1, 1906, p. 96.

Camptolithus Lindstrom, Kongl. Sven. Vet.-Akad. Handl., 32, No. 1, 1899, pp. 37, 74, 99.

Lyellia affinis (Billings).

Heliolites affinis Billings, Canadian Nat. Geol., n. s., 2, 1865, p. 427; Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 5, fig. 12.—Nicholson and Etheridge, Mon. Sil. Foss. Girvan Dist., p. 251.

Lyellia affinis Rominger, Geol. Surv. Michigan, 3, pt. 2, p. 17 (gen. ref.).—Lambe, Cont. Can. Pal., Geol. Surv. Canada, 4, pt. 1, 1899, p. 84, pl. 5, figs. 1, 1a.—Schuchert, Proc. U. S. Nat. Mus., 22, 1900, p. 153.—Whiteaves, Geol. Surv. Canada, Pal. Foss., 3, pt. 4, 1906, p. 293.

Propora affinis Kiär, Vid.-Selsk, Skrifter, Math.-naturw. Kl., No. 10, 1903, p. 52.

Early Silurian: Wreck Point, Junction Cliff, etc., Anticosti (Charleton—Chicotte); Lake Temiscaming; Thorold, Ontario; Baffin Land.

Lyellia americana Edwards and Haime.

Lyellia americana Edwards and Haime, Mon. d. Polyp. Foss. d. Terr. Pal., 1861 (Arch. du Mus. d'Hist. Nat., 5), p. 226, pl. 14, figs. 3, 3a.—Milne Edwards, Hist. Nat. d. Corall., 3, 1860, p. 243.—Rominger, Geol. Surv. Michigan, 3, pt. 2, 1876, p. 15, pl. 2, figs. 1, 2.—James, Paleontologist, No. 2, 1878, p. 11.—White, 11th Ann. Rep. Indiana Dep. Geol. Nat. Hist., 1882, p. 381, pl. 47, fig. 5.—Hall, 12th Rep., ibid., 1883, p. 252, pl. 2, figs. 4, 5; pl. 3, fig. 7.—Davis, Kentucky Fossil Corals, Geol. Surv. Kentucky, pt. 2, 1885, pl. 3,

Lyellia americana—Continued.

fig. 2.—Lesley, Geol. Surv. Pennsylvania, Rep. P. 4, 1889, p. 365, figs.—Miller, N. A. Geol. Pal., 1889, p. 195, fig. 188.—Lambe, Cont. Can. Pal., Geol. Surv. Canada, 4, pt. 1, 1899, p. 85, pl. 5, figs. 2, 2a.—Grabau and Shimer, N. A. Index Fossils, 1, 1906, p. 96, figs. 154–155.

Niagaran: Drummonds Island, Lake Huron; Michigan; Iowa; Indiana; Kentucky; Tennessee; Anticosti, etc.

Lyellia decipiens Rominger.

Lyellia decipiens Rominger, Geol. Surv. Michigan, 3, pt. 2, 1876, p. 17, pl. 3, fig. 1.—Lambe, Cont. Can. Pal., Geol. Surv. Canada, 4, pt. 1, 1899, p. 86.

Niagaran: Point Detour and Drummond Island, Lake Huron.

Lyellia discoidea Davis.

Lyellia discoidea Davis, Kentucky Fossil Corals, Geol. Surv. Kentucky, pt. 2, 1885, pl. 4, figs. 2, 3.

Plasmopora? discoidea Lindstrom, Kongl. Sven. Vet.-Akad. Handl., 32, No. 1, 1899, p. 100.

Niagaran: Near Louisville, Kentucky (Louisville); Tennessee (Brownsport).

Lyellia eminula Foerste.

Lyellia eminula Foerste, Bull. Kentucky Geol. Surv., 7, 1906, p. 306, pl. 3, fig. 6; pl. 4, fig. 3.

Clinton (Waco): Near Waco and near Irvine, Kentucky.

Lyellia exigua (Billings).

Heliolites exiguus Billings, Canadian Nat. Geol., n. s., 2, 1865, p. 428; Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 31, fig. 14.—Nicholson and Etheridge, Mon. Sil. Foss. Girvan Dist., 1880, p. 250.—Roemer, Leth. geog., pt. 1, Leth. Pal., 1883, p. 508.

Lyellia exigua Rominger, Geol. Surv. Michigan, 3, pt. 2, 1876, p. 17 (gen. ref.).—Lambe, Cont. Can. Pal., Geol. Surv. Canada, 4, pt. 1, 1899, pl. 5, p. 86, figs. 3, 3a.

Gamachian (Ellis Bay) and Anticostian (Becsie River—Chicotte): Gamache Bay, etc., Anticosti.

Lyellia glabra (Owen).

Sarcinula (Porites) glabra Owen, Geol. Expl. Iowa, Wisconsin, Illinois, 2d ed., 1844, p. 70, pl. 13, fig. 11.

Sarcinula costata Owen, Geol. Expl. Iowa, Wisconsin, Illinois, 2d ed., 1844, p. 78, pl. 14, fig. 12.

Propora glabra Lindstrom, Kongl. Sven. Vet.-Akad. Handl., 32, No. 1, 1899, p. 100.

Lyellia glabra Edwards and Haime, Mon. d. Polyp. Foss. d. Terr. Pal., 1851 (Arch. du Mus. d'Hist. Nat., 5), p. 226, pl. 12, figs. 2–2c.—Milne Edwards, Hist. Nat. d. Corall., 3, 1860, p. 243.—Roemer, Lethæa geog., pt. 1, Leth. Pal., 1883, p. 514, fig. 132.—Davis, Kentucky Fossil Corals, Geol. Surv. Kentucky, pt. 2, 1885, pl. 2, fig. 1.—Calvin, Amer. Geol., 12, 1893, p. 111.

Niagaran: Iowa, Wisconsin, Illinois, Kentucky.

Lyellia papillata Rominger.

Lyellia papillata Rominger, Geol. Surv. Michigan, 3, pt. 2, 1876, p. 16, pl. 2, fig. 3.—Davis, Kentucky Fossil Corals, Geol. Surv. Kentucky, pt. 2, 1885, pl. 2, fig. 2; pl. 3, fig. 1; pl. 4, fig. 4.

Camptolithus papillatus Lindstrom, Kongl. Sven. Vet.-Akad. Handl., 32, No. 1, 1899, p. 101, pl. 10, figs. 25–30.

Niagaran: Point Detour and Drummond Island, Lake Huron; Louisville, Kentucky (Louisville).

Lyellia parvituba Rominger.
Lyellia parvituba Rominger, Geol. Surv. Michigan, 3, pt. 2, 1876, p. 17, pl. 2, fig. 4.
Niagaran: Drummond Island, Lake Huron; Louisville, Kentucky; Indiana.

Lyellia puella Davis.
Lyellia puella Davis, Kentucky Fossil Corals, Geol. Surv. Kentucky, pt. 2, 1885 pl. 2, fig. 3; pl. 51, fig. 5.
Plasmopora puella Lindstrom, Kongl. Sven. Vet.-Akad. Handl., 32, No. 1, 1899, p. 100.
Niagaran: Near Louisville, Kentucky (Louisville); Decatur County, etc., Tennessee (Brownsport).

Lyellia speciosa (Billings).
Heliolites speciosus Billings, Canadian Nat. Geol., n. s., 2, 1865, p. 426; Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 30, fig. 13.—Nicholson and Etheridge, Mon. Sil. Girvan Dist., 1880, p. 251.
Propora speciosa Lindstrom, Kongl. Sven. Vet.-Akad. Handl., 32, No. 1, 1899, p. 95, pl. 9, figs. 40–46; pl. 10, figs. 1–5.—Kiärer, Vid. Selsk. Skrifter, Math.-naturw. Kl., No. 10, 1903, p. 53.
Lyellia speciosa Rominger, Geol. Surv. Michigan, 3, pt. 2, 1876, p. 17 (gen. ref.).
Gamachian (Ellis Bay): Junction Cliff, Anticosti.

LYELLIA STRIATA James. See Strombodes mamillare wilmingtonensis.

Lyellia superba (Billings).
Trematopora superba Billings, Cat. Sil. Foss. Anticosti, 1866, p. 93.
Lyellia superba Lambe, Cont. Can. Pal., Geol. Surv. Canada, 4, pt. 1, p. 87, pl. 5, figs. 4, 5, 5a.—Whiteaves, Geol. Surv. Canada, Pal. Foss., 3, pt. 4, p. 248.
Niagaran: Cabots Head, Georgian Bay, and Ekwan River, Canada.

Lyellia thebesensis Foerste.
Lyellia thebesensis Foerste, Bull. Sci. Lab. Denison Univ., 14, 1909, p. 95, pl. 4, fig. 69.—Savage, Bull. Geol. Surv. Illinois, 23, 1913, p. 66, pl. 3, figs. 6, 7.
Upper Medinan (Edgewood): Near Thebes, Illinois; Edgewood, Louisiana, and Clarksville, Pike County, Missouri.

LYONSIA ANADONTOIDES Emmons. See Modiolopsis sinuata.

LYONSIA ANATINIFORMIS Emmons. See Pterotheca anatiformis.

LYONSIA CURTA Emmons. See Modiolopsis curta.

LYONSIA DUBIA Emmons. See Ctenodonta dubia.

LYONSIA FABA Emmons. See Colpomya faba.

LYONSIA GIBBOSA Emmons. See Ctenodonta gibbosa.

LYONSIA NASUTA Emmons. See Ctenodonta nasuta.

LYONSIA NUCULIFORMIS Emmons. See Ctenodonta nuculiformis.

LYONSIA SANGUINOLAROIDES D'Orbigny. See Ctenodonta sanguinolaroidea.

LYONSIA SUBMODIOLARIS D'Orbigny. See Modiolopsis modiolaris.

LYONSIA SUBSPATULATUS Emmons. See Prolobella subspatulata.

LYONSIA SUBTRUNCATA D'Orbigny. See Modiolodon truncatus.

LYONSIA TRENTONENSIS Emmons. See Endodesma trentonense.

LYONSIA TERMINALIS Emmons. See Modiolopsis terminalis.

LYOPORA Nicholson and Etheridge. Genotype: Palæopora? favosa McCoy.
Lyopora Nicholson and Etheridge, Mon. Sil. Foss. Girvan Dist., 1878, p. 26, pl. 2, figs. 1–1e.—Nicholson, Tab. Corals Pal. Period, 1879, p. 187.—Roemer, Leth. geog., pt. 1, Leth. Pal., 1883, p. 466.—Lambe, Cont. Can. Pal., Geol. Surv. Canada, 4, pt. 1, 1899, p. 88.—Lindström, Kongl. Sven. Vet.-Akad. Handl., 32, No. 1, 1899, p. 25.

Lyopora goldfussi (Billings).
Columnaria Goldfussi Billings, Canadian Nat. Geol., 3, 1858, p. 420; Geol. Surv. Canada, Rep. Progr. for 1857, 1858, p. 166.—Nicholson, Rep. Pal. Prov. Ontario, pt. 2, 1875, p. 9.
Lyopora Goldfussi Lambe, Cont. Can. Pal., Geol. Surv. Canada, 4, pt. 1, 1899, p. 88, pl. 5, figs. 6, 6a, 7.
Richmond: Snake Island and Traverse Point, Lake St. John, Canada; Wreck Point, Anticosti; Cape Smythe, Lake Huron.

LYRIOCRINUS Hall. Genotype: Marsupiocrinites? dactylus Hall.
Lyriocrinus Hall, Pal. New York, 2, 1852, pp. 197, 355.—Pictet, Traité de Pal., 2d ed., 4, 1857, p. 329.—Hall, 15th Rep. New York State Cab. Nat. Hist. for 1861, 1862, p. 126.—Dujardin and Hupé, Hist. Natur. du Zooph. Echin., 1862, p. 149; 20th Rep. New York State Cab. Nat. Hist., 1867, p. 325; 28th Rep., ibid., 1879, p. 139.—Zittel, Handb. Pal., 1, 1879, p. 378.—Wachsmuth and Springer, Proc. Acad. Nat. Sci. Philadelphia, 1881, pp. 358, 377 (Rev. Pal., pt. 2, pp. 184, 203); ibid., 1885, p. 321.—Miller, N. A. Geol. Pal., 1889, p. 258.—Wachsmuth and Springer, Mem. Mus. Comp. Zool. Harvard, 20, 1897, p. 261.—Weller, Bull. Chicago Acad. Sci. Nat. Hist. Surv., 4, pt. 1, 1900, p. 90, fig. 42.—Bather, Treatise on Zool., pt. 3, Echinoderma, London, 1900, p. 200.—Wachsmuth, Zittel-Eastman Textb. Pal., 1, 1900, p. 146.—Grabau, Bull. New York State Mus., 45, 1901, p. 156; Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 156.—Zittel, Grundzuge Pal., 1, 1910, p. 161.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 550.—Springer, Zittel-Eastman Textb. Pal., 2d ed., 1913, p. 189.

Lyriocrinus beecheri Hudson.
Lyriocrinus beecheri Hudson, Bull. New York State Mus., 80, 1905, pp. 277–280, figs. 4, 5, pl. 3, figs. 1–4.
Chazyan (Valcour): Valcour Island, New York.

Lyriocrinus dactylus (Hall).
Marsupiocrinites(?) dactylus Hall, Geol. New York, 4, 1843, p. 113, fig. 4; p. 114; tab. ill. 18, figs. 4, 5.
Melocrinus dactylus D'Orbigny, Prodr. de Pal., 1, 1849, p. 45 (gen. ref.).
Lyriocrinus dactylus Hall, Pal. New York, 2, 1852, p. 197, pl. 44, figs. 1a–g.—Pictet, Traite de Pal., 2d ed., 4, 1857, p. 329, pl. 101, fig. 12.—Miller, N. A. Geol. Pal., 1889, p. 258, figs. 352, 353.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 366, figs.—Wachsmuth and Springer, Mem. Mus. Comp. Zool. Harvard, 20, 1897, p. 262, pl. 11, figs. 5a–c.—Grabau, Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 156, fig. 51; Bull. New York State Mus., 45, 1901, p. 156, fig. 51.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 550, fig. 1880.
Rhodocrinus (Lyriocrinus) dactylus Shumard, Trans. Acad. Sci. St. Louis, 2 (Cat. Pal. Foss.), 1866, p. 379.

Lyriocrinus dactylus—Continued.
Lyriocrinus (Rhodocrinus) dactylus Hall, 11th Rep. Geol. Nat. Hist. Indiana, 1882, p. 271.
Clinton (Rochester): Lockport, New York, and vicinity.

Lyriocrinus melissa (Hall).
Rhodocrinus melissa Hall, Trans. Albany Inst., 4, 1863, p. 198 (Abstract, p. 4); 28th Rep. New York State Mus. Nat. Hist., doc. ed., 1875, 1877, pl. 15, figs. 18–27.
Rhodocrinus (Lyriocrinus) melissa Hall, ibid., mus. ed., 1879, p. 139, pl. 15, figs. 18–27.
Lyriocrinus melissa Wachsmuth and Springer, Proc. Acad. Nat. Sci. Philadelphia, 1881, p. 379 (Rev. Pal., pt. 2, p. 205).—Hall, 11th Ann. Rep. Indiana Dep. Geol. Nat. Hist., p. 269, pl. 14, figs. 18–27; pl. 15, fig. 11.—Miller, N. A. Geol. Pal., 1889, p. 259, fig. 354.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, pp. 366, 367, figs.—Keyes, Missouri Geol. Surv., 4, for 1894, 1895, pl. 21, fig. 6.—Wachsmuth and Springer, Mem. Mus. Comp. Zool., Harvard, 20, 1897, p. 263, pl. 11, figs. 4a–f.—Weller, Bull. Chicago Acad. Sci., Nat. Hist. Surv., 4, pt. 1, 1900, p. 91, pl. 3, figs. 6–8.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 550.
Niagaran: Waldron, etc., Indiana; Newsom, Tennessee (Waldron); Bridgeport, Romeo, and Joliet, Illinois (Racine).

Lyriocrinus sculptilis (Hall).
Rhodocrinus (Lyriocrinus) sculptilis Hall, 20th Rep. New York State Cab. Nat. Hist., 1868 (extras, 1865), p. 325; rev. ed., 1870, p. 368.
Lyriocrinus sculptilis Miller, N. A. Geol. Pal., 1889, p. 259 (gen. ref.).
Niagaran (?Racine): Waukesha, Wisconsin.

LYRIOCRINUS SCULPTILIS Miller. See Diabolocrinus vesperalis.

LYRIOPECTEN ORBICULOIDES Grabau. See Amphicœlia orbiculoidea.

LYRODESMA Conrad. Genotype: L. planum Conrad.
Lyrodesma Conrad, Ann. Geol. Rep. New York, 1841, p. 51.—Hall, 1847, Pal. New York, 1, 1847, p. 302.—McCoy, British Pal. Rocks, Foss., 1854, p. 272.—Woodward, Man. Mollusca, pt. 2, 1854, p. 273.—Pictet, Traite de Pal., 2d ed., 3, 1855, p. 534.—Hall, Canadian Nat. Geol., 1, 1856, p. 394; 10th Rep. New York State Cab. Nat. Hist., 1857, p. 185 (Extr., p. 145); 15th Rep. New York State Cab. Nat. Hist., 1862, pl. 11, fig. 5; 24th Rep. New York State Cab. Nat. Hist., 1872, p. 227 (Extr. 1871, p. 4).—Miller, Cincinnati Quart. Jour. Sci., 1, 1874, p. 226.—Zittel, Handb. Pal., 2, Munich, 1881, p. 55.—Miller, N. A. Geol. Pal., 1889, p. 487.—Ulrich, Geol. Surv. Ohio, 7, 1893, p. 682; Geol. Minnesota, 3, 1894, pt. 2, p. 608.—Dall, Zittel-Eastman Textb. Pal., 1, 1900, p. 378.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 481.

Lyrodesma acuminatum Ulrich.
Lyrodesma acuminatum Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 609, pl. 42, figs. 1–5.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 481, fig. 641e–f.
Black River (Decorah): Chatfield, and near Cannon Falls, Minnesota.
Cotypes.—Cat. Nos. 46214, 46215, U.S.N.M.

Lyrodesma acuminatum intermedium Ulrich.
Lyrodesma acuminatum var. intermedium Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 610, pl. 42, figs. 3–4, fig. 45h.
Black River (Decorah): Chatfield, and near Cannon Falls, Minnesota.
Trenton: Near Burgin, Kentucky.
Cotypes.—Cat. Nos. 46216, 46217, U.S.N.M.

Lyrodesma cannonense Ulrich.
Nucula poststriata Hall, Pal. New York, 1, 1847, p. 151, pl. 34, figs. 2a–2b. (Not p. 301, pl. 82, figs. 10a, b.)
Lyrodesma cannonense Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 610, pl. 42, figs. 6–8.
Trenton: Cannon Falls, Minnesota (Prosser); Carlisle, Pennsylvania.
Cotypes.—Cat. Nos. 46218, 46219, U.S.N.M.

Lyrodesma cincinnatiense Hall.
Lyrodesma Cincinnatiensis Hall, 24th Rep. New York State Cab. Nat. Hist., 1872, p. 227, pl. 7, fig. 28 (Extr. 1871, p. 4).—Miller, Cincinnati Quart. Jour. Sci., 1874, p. 226.—Hall and Whitfield, Geol. Surv. Ohio, Pal. 2, 1875, p. 82, pl. 1, fig. 25.
Eden (Economy): Cincinnati, Ohio, and vicinity.

Lyrodesma conradi Ulrich.
Lyrodesma conradi Ulrich, Geol. Surv. Ohio, 7, 1893, p. 684, pl. 47, fig. 9.
Eden (Southgate): Cincinnati, Ohio, and vicinity.
Holotype.—Cat. No. 46220, U.S.N.M.

Lyrodesma grande Ulrich.
Lyrodesma grande Ulrich, Geol. Surv. Ohio, 7, 1893, p. 683, pl. 50, fig. 13.
Maysville (Bellevue): Cincinnati, Ohio, and vicinity.
Holotype.—Cat. No. 46221, U.S.N.M.

Lyrodesma inornatum Ulrich.
Lyrodesma inornatum Ulrich, Geol. Surv. Ohio, 7, 1893, p. 682, pl. 50, figs. 10, 12.
Maysville (Fairmount): Covington, Kentucky, and vicinity.
Cotypes.—Cat. No. 46222, U.S.N.M.

Lyrodesma major (Ulrich).
Cleidophorus major Ulrich, Jour. Cincinnati Soc. Nat. Hist., 2, 1879, p. 25, pl. 7, fig. 23.
Lyrodesma major Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 611, fig. 45a–g.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 481, fig. 641a–d.
Maysville (Corryville): Cincinnati, Ohio, and vicinity.
Richmond: Clarksville, Ohio; Spring Valley, Minnesota.
Holotype and *plesiotypes.*—Cat. Nos. 46223, 46224, U.S.N.M.

Lyrodesma planum Conrad.
Lyrodesma plana Conrad, 5th Ann. Rep. Geol. Surv. New York, 1841, p. 51.—Hall, Pal. New York, 1, 1847, p. 302, pl. 82, figs. 11a, b.—Pictet, Traité de Pal., 2d ed., 3, 1855, p. 534, pl. 79, fig. 17.—Miller, Cincinnati Quart. Jour. Sci., 1, 1874, p. 226.
Leda plana Emmons, Amer. Geology, 1, pt. 2, 1855, p. 173.
Cincinnatian (Pulaski): Pulaski, etc., New York.

Lyrodesma poststriatum (Emmons).
Nuculites post-striatus Emmons, Nat. Hist. New York, Geol., 2, 1842, p. 399, text fig. 4.—McCoy, British Pal. Rocks Foss., 1854, p. 286, pl. 1K, fig. 6.
Nucula postriata Hall, Pal. New York, 1, 1847, p. 151, pl. 34, figs. 2a, b; p. 301, pl. 82, figs. 10a, b.—Lincklaen, 14th Rep. New York State Cab. Nat. Hist., 1861, pl. 4, fig. 5.
Cardiomorpha postriata Emmons, Amer. Geology, 1, pt. 2, 1855, p. 175, pl. 17, fig. 22; Emmons, Man. Geol., 1860, p. 101, fig. 91.
Arca poststriata D'Orbigny, Prodr. de Pal., 1, 1849, p. 13 (gen. ref.).

Lyrodesma poststriatum—Continued.

Lyrodesma poststriata Billings, Geol. Canada, Geol. Surv. Canada, 1863, p. 176, figs. 167a, b.—Nicholson, Rep. Pal. Prov. Ontario, pt. 2, 1875, p. 36, fig. 11b.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 368, figs.—Miller, N. A. Geol. Pal., 1889, p. 487, fig. 844.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 481.—Foerste, Bull. Sci. Lab. Denison Univ., 17, 1914, p. 306.

Cincinnatian: Loraine, Pulaski, etc., New York (Pulaski); Cincinnati, Ohio, and vicinity (Maysville).

LYDRODESMA PULCHELLA Hall. See Ctenodonta pulchella.

Lyrodesma schucherti Ruedemann.

Lyrodesma schucherti Ruedemann, Bull. New York State Mus., 62, 1912, p. 103, pl. 6, fig. 12.

Trenton (Snake Hill): Snake Hill, Saratoga County, New York.

Lyrodesma subplanum Ulrich.

Lyrodesma subplanum, Ulrich, Geol. Surv. Ohio, 7, 1893, p. 683, pl. 47, fig. 8.—Foerste, Jour. Cincinnati Soc. Nat. Hist., 21, 1914, p. 136.

Trenton (Upper): Covington, Rogers Gap, etc., Kentucky.

Holotype.—Cat. No. 46225, U.S.N.M.

LYSOCYSTIS Bather. See Lysocystites Miller.

LYSOCYSTITES Miller. Genotype: Echinocystites nodosus Hall.

Echinocystites Hall, 18th Rep. New York State Cab. Nat. Hist., 1864, p. 12 (adv. sheets); 20th Rep. New York State Cab. Nat. Hist., doc. ed., 1867, p. 316; rev. ed., 1870, p. 360.—Zittel, Handb. Pal., 1, 1879, p. 413.—Bather, Geol. Mag., dec. 4, 6, 1897, p. 381; Treatise on Zool. (Lankester), pt. 3, 1900, p. 70.

Echinocystis Haeckel, Amphor. und Cystoid., 1896, p. 146, pl. 4, figs. 31–34.

Lysocystites Miller, N. A. Geol. Pal., 1889, p. 259 (Echinocystites preoccupied).

Lysocystis Bather, Geol. Mag., dec. 4, 4, 1897, p. 381.

Lysocystites nodosus (Hall).

Echinocystites nodosus Hall, 20th Rep. New York State Cab. Nat. Hist., 1868 (extras, 1864), p. 316, pl. 12 (3), figs. 10, 11; rev. ed., 1870, p. 361, pl. 12, figs. 10. 11,—Chamberlin, Geol. Wisconsin, 1883, 1, p. 191, fig.

Lysocystites nodosus Miller, N. A. Geol. Pal., 1889, p. 259 (gen. ref.).

Niagaran (Racine): Racine, Wisconsin.

MACHAIRODUS INCURVUS Pander. See Distacodus incurvus.

MACLUREA of authors. See Maclurites Leseuer.

MACLUREA CUNEATA Whitfield. See Maclurina cuneata.

MACLUREA LABIATUS Emmons and Owen. See Raphistoma stamineum.

MACLUREA MANITOBENSIS Whiteaves. See Maclurina manitobensis.

MACLUREA STRIATA Emmons. See Raphistoma striatum.

MACLUREA SUBROTUNDA Whitfield. See Maclurina subrotunda.

MACLURINA Ulrich and Scofield. Genotype: Maclurea manitobensis Whiteaves.

Maclurina Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, pp. 1038–1041.—Koken, Neues. Jahrb. Min., Geol. Pal., 1, 1898, p. 21.

Maclurina cuneata (Whitfield).

Maclurea cuneata Whitfield, Ann. Rep. Geol. Surv. Wisconsin, 1878, p. 75; Geol. Wisconsin, 4, 1882, p. 246, pl. 9, figs. 5–6.

Maclurina cuneata—Continued.

Maclurina cuneata Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 1042, pl. 36, figs. 1–3; pl. 82, fig. 46.—Schuchert, Proc. U. S. Nat. Mus., 22, 1900, p. 167.

Maclurea (Maclurina) cuneata Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 666, fig. 922.

Trenton: Whitewater, Wisconsin; Stewartville, etc., Minnesota (Stewartville); Dubuque, Iowa, etc. (Galena); Baffin Land.

Plesiotype.—Cat. No. 45939, U.S.N.M.

Maclurina manitobensis (Whiteaves).

Maclurea manitobensis Whiteaves, Trans. Roy. Soc. Canada, 7, sec. 4, 1890, p. 75, pl. 12; pl. 13, figs. 1, 2; Canadian Rec. Sci., 5, 1893, p. 324.

Maclurina manitobensis Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 1041, pl. 76, figs. 4, 5; pl. 82, fig. 45.—Schuchert, Proc. U. S. Nat. Mus., 22, 1900, p. 166.

Maclurea (Maclurina) Manitobensis Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 3, 1897, pp. 194, 196, fig. 11, pl. 20, fig. 11.

Maclurea (Maclurina) manitobaensis Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 666, fig. 921.

Trenton: Lake Winnipeg, etc., Manitoba; Goodhue and Fillmore Counties, etc., Minnesota (Stewartville); Baffin Land; Texas, etc.

Plesiotypes.—Cat. No. 45940, U.S.N.M.

Maclurina manitobensis acuta Parks.

Maclurina manitobensis var. acuta Parks in Tyrrell, 22d Rep. Ontario Bur. Mines, 1913, p. 32.

Mohawkian or Richmond: Shamattawa River, Manitoba.

Maclurina subrotunda (Whitfield).

Maclurea subrotunda Whitfield, Ann. Rep. Geol. Surv. Wisconsin for 1877, 1878, p. 75; Geol. Wisconsin, 4, 1882, p. 246, pl. 9, figs. 7, 8.

Maclurina subrotunda Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 1043.

Trenton (Stewartville): Whitewater, Wisconsin; Stewartville, Minnesota.

Plesiotype.—Cat. No. 45941, U.S.N.M.

MACLURITES Lesueur. Genotype: M. magnus Lesueur.

Maclurites Lesueur, Jour. Acad. Nat. Sci. Philadelphia, 1, 1818, p. 312.

Maclurea Woodward, Manual Mollusca, 1842, p. 202.—Emmons, Geol. Rep. New York, 2d Dist., 1842, pp. 107, 273, 276, fig. 1.—Roemer, Neues Jahrb. f. Min., etc., 1848, p. 172.—Woodward, Manual Mollusca, pt. 2, 1854, p. 202.—McCoy, British Pal. Rocks Foss., 1854, p. 300.—Pictet, Traité de Pal., 2d ed., 3, 1855, p. 154.—Salter, Geol. Surv. Canada, Canadian Org. Rem., dec. 1, 1859, p. 7.—Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, pp. 235, 236, 310.—Waagen, Mem. Geol. Surv. India, Pal. Indica, 13th ser., 1, 1880, p. 87.—Zittel, Handb. Pal., 2, 1882, p. 207.—Miller, N. A. Geol. Pal., 1889, p. 408.—Koken, Neues Jahrb. Min., Geol. Pal., 6, Beilage-Band, 1889, pp. 419, 432; Die Leitfossilien, Leipzig, 1896, p. 396.—Ulrich and Scofield, Geol. Minnesota, 3, 1897, p. 1033.—Grabau and Shimer, N. A. Index Fossils, 2, 1909, p. 664.

Leseurilla Koken, Neues Jahrb. Min., Geol. Pal., 1, 1898, p. 22.

Maclurites acuminatus (Billings).

Maclurea acuminata Billings, Pal. Fossils, 1, Geol. Surv. Canada, 1865, p. 240, fig. 225.—Whitfield, Bull. Amer. Mus. Nat. Hist., 3, 1890, p. 32, pl. 2, figs. 1, 2.—Sardeson, Jour. Geol., 11, 1903, p. 479, figs. 10–12.—Seely, Rep. Vermont State Geol., 7, 1910, pl. 57, figs. 9, 10.

Canadian: Table Head and Point Rich, Newfoundland (Quebec—K, N); Fort Cassin, Vermont (Beekmantown).

Maclurites affinis (Billings).
Maclurea affinis Billings, Pal. Fossils, 1, Geol. Surv. Canada, 1865, p. 238, figs. 224a, b.—Whitfield, Bull. Amer. Mus. Nat. Hist., 9, 1897, p. 180, pl. 4, figs. 8, 9.
Lesueurilla affinis Koken, Neues Jahrb. Min., Geol. Pal., 1, 1898, p. 22 (gen. ref.).
Canadian: Keppel Island, Newfoundland (Quebec—F); Otter Creek, Vermont (Beekmantown).

Maclurites annulatus (Walcott).
Maclurea annulata Walcott, Mon. U. S. Geol. Surv., 8, 1884, p. 81, pl. 11, figs. 19, 19a.
Upper Pogonip: White Mountain, Eureka District, Nevada.
Cotype.—Cat. Nos. 17338, 17339, U.S.N.M.

Maclurites atlanticus (Billings).
Maclurea atlantica Billings, Canadian Nat. Geol., 4, 1859, p. 459.
Maclurites atlanticus Raymond, Ann. Carnegie Mus., 4, 1908, p. 201.
Chazyan (Mingan): Mingan Islands, Canada.

Maclurites avellanedæ (Kayser).
Maclurea avellanedæ Kayser, Beitr. Geol. Pal. Argentin. Republik, Pal. Suppl., 3, 1876, p. 15, pl. 4, figs. 1, 2; Zeit. d. Deutschen geol. Gesell., 49, 1897, p. 283.
Ordovician: Talacastra, Argentina.

Maclurites bigsbyi (Hall).
Maclurea bigsbyi Hall, Rep. Geol. Surv. Wisconsin, 1861, p. 37.—Whitfield, Geol. Wisconsin, 4, 1882, p. 222, pl. 6, figs. 17, 18; Geol. Wisconsin, 1, 1883, p. 157, fig.; Mem. Amer. Mus. Nat. Hist., 1, 1895, p. 62, pl. 8, figs. 14, 15 (not 12, 13).—Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 1039, pl. 75, figs. 5-10.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 664, fig. 919.
Black River (Platteville): Mineral Point, Fulton, Janesville, etc., Wisconsin; Dixon, etc., Illinois.
Plesiotypes.—Cat. No. 45933, U.S.N.M.

Maclurites bigsbyi dixonensis (Ulrich).
Maclurea bigsbyi var. dixonensis Ulrich, Geol. Minnesota, 3, pt. 2, 1897, p. 1039.
Black River (Platteville): Dixon, Illinois.
Holotype.—Cat. No. 45934, U.S.N.M.

Maclurites carinatus (Walcott).
Maclurea carinata Walcott, Mon. U. S. Geol. Surv., 8, 1884, p. 82, pl. 11, figs. 20, 20a.
Upper Pogonip: Lone Mountain, Eureka District, Nevada.
Cotypes.—Cat. No. 17342, U.S.N.M.

Maclurites crassus (Ulrich and Scofield).
Maclurea crassa Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 1040, pl. 75, figs. 12-14.—Schuchert, Proc. U. S. Nat. Mus., 22, 1900, p. 167.
Trenton: Lime City, Stewartville, Wykoff, etc., Minnesota (Stewartville); Baffin Land.
Cotype.—Cat. No. 45935, U.S.N.M.

Maclurites crassus macer (Ulrich and Scofield).
Maclurea crassa var. macra Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 1041, pl. 75, figs. 15, 16.
Trenton (Prosser): Hader, Minnesota.
Holotype.—Cat. No. 45936, U.S.N.M.

Maclurites crenulatus (Billings).

Maclurea crenulata Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 236, fig. 222a–c.—Miller, N. A. Geol. Pal., 1889, p. 408, fig. 683.

Chazyan (Quebec, I-N): Table Head and Point Rich, Newfoundland.

Maclurites depressus (Ulrich and Scofield).

Maclurea depressa Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 1040, pl. 75, figs. 1–4.

Black River (Platteville): Minneapolis, Minnesota.

Cotype.—Cat. No. 45937, U.S.N.M.

Maclurites emmonsi (Billings).

Maclurea Emmonsi Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 242, fig. 227a–c.

Lesueurilla Emmonsi Koken, Neues Jahrb. Min., Geol. Pal., 1, 1898, p. 22 (gen. ref.).

Chazyan (Quebec, I-N): Point Rich and Table Head, Newfoundland.

Maclurites knoxvillensis (Ulrich).

Maclurea knoxvillensis Ulrich, Geol. Minnesota, 3, pt. 2, 1897, p. 1039.

Chazyan (Lenoir): Knoxville, Tennessee.

Cotype.—Cat. No. 45938, U.S.N.M.

Maclurites logani (Salter).

Maclurea logani Salter, Rep. 21st Meeting British Assoc. Adv. Sci., Notes and Abstracts, 1852, p. 63.—Woodward, Man. Mollusca, pt. 2, 1854, p. 202, fig. 106.—Salter, Geol. Surv. Canada, dec. 1, 1859, p. 7, pl. 1, figs. 1–6.—Hitchcock, Geol. Vermont, 1, 1861, p. 296.—Chapman, Canadian Jour., n. s., 7, 1862, p. 119, fig. 117; ibid., 8, 1863, p. 197, fig. 170; Expos. Min. Geol. Canada, 1864, p. 123, fig. 117; p. 169, fig. 170.—Roemer, Leth. geog., 1, Leth. Pal. Atlas, 1876, pl. 5, fig. 6.—Etheridge, Quart. Jour. Soc. London, 34, 1878, p. 606.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 664, fig. 920.

Black River: Allumette Island, Ottawa River (Leray), and Mingan Islands, Canada; Bessels Bay, Arctic America.

Maclurites magnus Lesueur.

Maclurites magna Lesueur, Jour. Acad. Nat. Sci. Philadelphia, 1, 1818, p. 312, pl. 13, figs. 1–3.—Raymond, Ann. Carnegie Mus., 4, 1908, p. 199, pl. 50, figs. 1, 2; pl. 51, figs. 1, 2; pl. 52, figs. 1–4.

Straparollus magnus D'Orbigny, Prodr. Pal., 1, 1849, p. 6 (gen. ref.).—Emmons, Amer. Geol., 1, pt. 2, 1855, p. 156, pl. 4, fig. 15; Man. Geol., 1860, p. 94, fig. 79.

Maclurea magna Emmons, Rep. 2d Dist., New York State Surv., 1842, p. 276, fig. 1.—Hall, Pal. New York, 1, 1847, p. 26, pl. 5, figs. 1a–e; pl. 5, (bis), figs. 1a–c.—Rogers, Geol. Pennsylvania, 2, pt. 2, 1858, p. 817, fig. 595.—Hitchcock, Geol. Vermont, 1, 1861, p. 278, fig. 177.—Lincklaen, 14th Rep. New York State Cab. Nat. Hist., 1861, p. 30, pl. 1, fig. 11.—Etheridge, Quart. Jour. Soc. London, 34, 1878, p. 605.—Whitfield, Amer. Jour. Sci. Arts, 3d ser., 18, 1879, p. 227.—Dwight, Proc. Poughkeepsie Soc. Nat. Sci., 1880, p. 18; Proc. Assoc. Adv. Sci., 31, 1883, p. 385.—Lesley, Geol. Surv. Pennsylvania Rep., P 4, 1889, p. 369, figs.—Keyes, Missouri Geol. Surv., 5, 1894, p. 163, pl. 52, fig. 9a, b.—Raymond, Bull. Amer. Pal., 3, 1902, p. 305, pl. 18, fig. 10.—Bassler, Bull. Virginia Geol. Surv., no. 2a, 1909, pl. 20, figs. 8, 9.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 664, fig. 918, a.

Euomphalus maclurii Troost, 5th Geol. Rep. Tennessee, 1840, p. 55.

Chazyan: Chazy, etc., New York; Isle la Motte, Vermont (Crown Point); East Tennessee (Lenoir); Virginia; Maryland; Pennsylvania; etc. (Middle Stones River).

Maclurites matutinus (Hall).
Maclurea matutina Hall, Pal. New York, 1, 1847, p. 10, pl. 3, fig. 3.—Billings, Canadian Nat. Geol., 4, 1859, p. 357, fig. 7.—Hitchcock, Geol. Vermont, 1, 1861, p. 271, fig. 171.—Billings, Geol. Canada, Geol. Surv. Canada, 1863, p. 115, figs. 24a, b. (?25a, b, c).—Lesley, Geol. Surv. Pennsylvania, Rep., P 4, 1889, p. 370, figs.
Straparollus matutina Emmons, Amer. Geology, 1, pt. 2, 1855, p. 156.
Canadian (Tribes Hill): Canajoharie, etc., Mohawk Valley, New York.

Maclurites minimus (Hall and Whitfield).
Maclurea minima Hall and Whitfield, U. S. Geol. Expl. 40th Parall., 4, 1877, p. 235, pl. 1, figs. 17-19.
Pogonip: Ute Peak, Wasatch Range, Utah.
Cotypes.—Cat. No. 17352, U.S.N.M.

Maclurites nitidus (Ulrich and Scofield).
Maclurea nitida Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 1040, pl. 75, fig. 11.
Black River (Platteville): Mineral Point and Beloit, Wisconsin; Dixon, Illinois.
?Stones River (Murfreesboro): Murfreesboro, Tennessee.

Maclurites oceanus (Billings).
Maclurea oceana Billings, Pal. Fossils, 1, Geol. Surv. Canada, 1865, p. 237, figs. 223a, b.—Bassler, Bull. Virginia Geol. Surv., 2a, 1909, pl. 20, figs. 4, 5.
Canadian: Port aux Choix, Table Head, Cape Norman and Pistolet Bay, Newfoundland (Quebec, F—H); Virginia (Beekmantown).

Maclurites ponderosus (Billings).
Maclurea ponderosa Billings, Pal. Fossils, 1, Geol. Surv. Canada, 1865, p. 239.
Chazyan (Quebec—P): Cow Head, Newfoundland; and Phillipsburg, Quebec.

Maclurites psyche (Billings).
Maclurea Psyche Billings, Pal. Fossils, 1, Geol. Surv. Canada, 1865, p. 244.
Canadian (Quebec—G): Cape Norman, Newfoundland.

Maclurites rotundatus (Billings).
Maclurea rotundata Billings, Pal. Fossils, 1, Geol. Surv. Canada, 1865, p. 245, fig. 231a, b.
Canadian (Quebec—G): Bonne Bay, Newfoundland.

Maclurites sarmienti (Kayser).
Maclurea Sarmienti Kayser, Beitr. Geol. Pal. Argentin. Republik, Pal. Suppl., 3, 1876, p. 16, pl. 4, figs. 4, 4c.
Ordovician: Talacastra, Argentina.

Maclurites sordidus (Hall).
Maclurea sordida Hall, Pal. New York, 1, 1847, p. 10, pl. 3, figs. 2, 2a.—Hitchcock, Geol. Vermont, 1, 1861, p. 271.—Whitfield, Bull. Amer. Mus. Nat. Hist., 2, 1889, p. 49, pl. 8, figs. 1-4.—Seely, Rep. Vermont State Geol., 7, 1910, pl. 56, fig. 1.
Straparollus sordidus Emmons, Amer. Geology, 1, pt. 2, 1855, p. 156, pl. 3, fig. 6.
Ophileta sordida Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 500, figs.
Canadian (Beekmantown): New York; Fort Cassin, Vermont.

Maclurites speciosus (Billings).
Maclurea speciosa Billings, Pal. Fossils, 1, Geol. Surv. Canada, 1865, p. 240, fig. 226.
Canadian (Quebec, G—M): Point Rich, Table Head, Cape Norman, Schooner Island, Newfoundland.

Maclurites(?) stelzneri (Kayser).
Maclurea(?) Stelzneri Kayser, Beitr. Geol. Pal., Argentin. Republik, Pal. Suppl., 3, 1876, p. 17, pl. 4, figs. 5, 6.
Ordovician: Talacastra, Argentina.

Maclurites striata Troost. Not recognizable.
Maclurites striata Troost, 5th Rep. Geol. Tennessee, 1840, p. 55.
"Grauwacke": Hawkins County, Tennessee.

Maclurites subannulatus (Walcott).
Maclurea subannulata Walcott, Mon. U. S. Geol. Surv., 8, 1884, p. 82, pl. 11, figs. 18, 18a, b.
Upper Pogonip: White Mountain, Eureka District, Nevada.
Cotypes.—Cat. No. 17346, U.S.N.M.

Maclurites subovatus (Parks).
Maclurea subovata Parks in Tyrrell, 22d Rep. Ontario Bur. Mines, 1913, p. 32.
Mohawkian or Richmond: Shamattawa River, Manitoba.

Maclurites sylpha (Billings).
Maclurea Sylpha Billings, Pal. Fossils, 1, Geol. Surv. Canada, 1865, p. 244.
Canadian (Quebec—G): Cape Norman, Newfoundland.

Maclurites transitionis (Billings).
Maclurea transitionis Billings, Pal. Fossils, 1, Geol. Surv. Canada, 1865, p. 241.
Chazyan (Quebec—K, L): Table Head and Point Rich, Newfoundland.

MACROCYPRIS Brady. Genotype: M. minna Baird.
Macrocypris Brady, Intellectual Observer, 12, London, 1867, p. 119.—Jones and Kirby, Proc. Geol. Socc. London, 9, 1886, p. 510.—Jones, Ann. Mag. Nat. Hist., 5th ser., 19, 1887, p. 178.—Miller, N. A. Geol. Pal., 1st App., 1889, p. 709.—Ulrich, Zittel-Eastman Textb. Pal., 1, 1900, p. 646.—Bassler, ibid., 2d ed., 1913, p. 740.

Macrocypris? siliqua (Jones).
Cytheropsis siliqua Jones, Ann. Mag. Nat. Hist., 3d ser., 1, 1858, p. 249, pl. 10, fig. 6; Geol. Surv. Canada, dec. 3, 1858, p. 99.
Macrocypris? siliqua Jones, Geol. Surv. Canada, Cont. Micro-Pal., pt. 3, 1891, p. 99.
Black River (Leray): Pauquette's Rapids, Ottawa River, Canada.

Macrocypris? subcylindrica Jones.
Macrocypris? subcylindrica Jones, Quart. Jour. Geol. Soc. London, 46, 1890, p. 549, pl. 21, figs. 5a, b.
Richmond (English Head): English Head, Anticosti.

MACRONOTELLA Ulrich. Genotype: M. scofieldi Ulrich.
Macronotella Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 683.—Bonnema, Mitt. Min. Geol. Inst. Groningen, 2, 1909, p. 55.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 348.

Macronotella fragaria Ruedemann.
Macronotella fragaria Ruedemann, Bull. New York State Mus., 49, 1901, p. 85, pl. 6, figs. 3–5.
Mohawkian (Rysedorph): Rysedorph Hill, Rensselaer County, New York.

Macronotella scofieldi Ulrich.
Macronotella scofieldi Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 684, pl. 43, figs. 30–34.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 348, fig. 1657, u, v.

Macronotella scofieldi—Continued.

Isochilina scofieldi Miller, N. A. Geol. Pal., 2d App., 1897, p. 788 (gen. ref.).

Black River: Near Cannon Falls, Minnesota (Platteville); High Bridge, Kentucky (Lowville).

Cotypes.—Cat. Nos. 41848, 41849, U.S.N.M.

Macronotella ulrichi Ruedemann.

Macronotella ulrichi Ruedemann, Bull. New York State Mus., 49, 1901, p. 83, pl. 6, figs. 6–16; pl. 7, fig. 1.

Mohawkian (Rysedorph): Rysedorph Hill and Moordener kill, Rensselaer County, New York.

MACROSTYLOCRINUS Hall. Genotype: M. ornatus Hall.

Macrostylocrinus Hall, Pal. New York, 2, 1852, p. 203.—Pictet, Traité de Pal., 2d ed., 4, 1857, p. 329.—Dujardin and Hupe, Hist. Natur. Zooph. Echin., 1862, p. 149.—Hall, Trans. Albany Inst., 4, 1863, p. 207 (Abstract, p. 12); 28th Rep. New York State Mus. Nat. Hist., mus. ed., 1879, p. 128.—Zittel, Handb. Pal., 1, 1879, p. 368.—Wachsmuth and Springer, Proc. Acad. Nat. Sci. Philadelphia, 1881, pp. 270, 276 (Rev. Pal., pt. 2, pp. 96, 102); ibid., 1885, p. 324.—Ringueberg, Jour. Soc. Nat. Hist., 5, 1882, p. 119.—Hall, 11th Ann. Rep. Indiana Dep. Geol. Nat. Hist., 1882, p. 256.—De Loriol, Pal. Francaise, 11, Crin., 1882, p. 56.—Miller, N. A. Geol. Pal., 1889, p. 259.—Wachsmuth and Springer, Mem. Mus. Comp. Zool., Harvard (N. A. Crin. Cam.), 20, 1897, p. 285.—Weller, Bull. Chicago Acad. Sci., Nat. Hist. Surv., 4, pt. 1, 1900, p. 92, fig. 43.—Bather, Treatise on Zool., pt. 3, Echinoderma, London, 1900, p. 162.—Wachsmuth, Zittel-Eastman Textb. Pal., 1, 1900, p. 148.—Springer, ibid., 2d ed., 1913, p. 191.—Zittel, Grundzuge Pal., 1, 1910, p. 162.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 554.

Macrostylocrinus fasciatus (Hall).

Cyathocrinus fasciatus Hall, 28th Rep. New York State Mus. Nat. Hist., doc. ed., 1875, 1877, pl. 13, figs. 5, 6.

Macrostylocrinus fasciatus, Hall ibid., mus. ed., 1879, p. 130, pl. 13, figs. 5, 6; 11th Ann. Rep. Indiana Dep. Geol. Nat. Hist., 1882, pp. 258, 259, fig., pl. 12, figs. 5, 6.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 378, figs.—Weller, Bull. Chicago Acad. Sci.,. Nat. Hist. Surv., 4, pt. 1, 1900, p. 95.—Wachsmuth and Springer, Mem. Mus. Comp. Zool., Harvard, 20, 1897, p. 288, pl. 22, fig. 13.

Niagaran (Waldron): Waldron and Hartsville, Indiana.

Macrostylocrinus fusibrachiatus Ringueberg.

Macrostylocrinus fusibrachiatus Ringueberg, Jour. Cincinnati Soc. Nat. Hist., 5, 1882, p. 119, pl. 5, fig. 4.—Miller, N. A. Geol. Pal., 1889, p. 259, fig. 356.—Wachsmuth and Springer, Mem. Mus. Comp. Zool., Harvard, 20, 1897, p. 291, pl. 23, figs. 9, 10.

Clinton (Rochester): Lockport, New York.

Macrostylocrinus granulosus (Hall).

Macrostylocrinus striatus var. granulosus Hall, 28th Rep. New York State Mus. Nat. Hist., mus. ed., 1879, p. 129; 11th Ann. Rep. Indiana Dep. Geol. Nat. Hist., 1882, p. 258.

Macrostylocrinus granulosus Wachsmuth and Springer, Mem. Mus. Comp. Zool. Harvard, 20, 1897, p. 289, pl. 22, fig. 15a, b.

Niagaran (Waldron): Waldron and Hartsville, Indiana.

Macrostylocrinus indianensis Miller and Gurley.

Macrostylocrinus indianensis Miller and Gurley, Bull. Illinois State Mus. Nat. Hist., 6, 1895, p. 33, pl. 3, fig. 23.

Niagaran (Laurel): St. Paul, Indiana.

Macrostylocrinus meeki (Lyon).

Actinocrinus Meeki Lyon, Proc. Acad. Nat. Sci. Philadelphia, 1861, p. 411, pl. 4, figs. 4a, b.

Macrostylocrinus Meeki Wachsmuth and Springer, Proc. Acad. Nat. Sci. Philadelphia, 1881, p. 277 (Rev. Pal., pt. 2, p. 103); Mem. Mus. Comp. Zool., Harvard, 20, 1897, p. 290, pl. 22, figs. 16a, b.

Niagaran (Louisville): Jefferson County, Kentucky.

Macrostylocrinus obconicus Weller.

Macrostylocrinus obconicus Weller, Bull. Chicago Acad. Sci., Nat. Hist. Surv., 4, pt. 1, 1900, p. 95, pl. 4, figs. 6, 7.

Niagaran (Racine): Bridgeport, Illinois.

Macrostylocrinus ornatus Hall.

Macrostylocrinus ornatus Hall, Pal. New York, 2, 1852, p. 204, pl. 46, figs. 4a-g.—Wachsmuth and Springer, Mem. Mus. Comp. Zool., Harvard, 20, 1897, p. 286, pl. 23, figs. 8a-c.

Ctenocrinus ornatus Shumard, Trans. Acad. Sci. St. Louis, 2, 1866, p. 361 (gen. ref.).

Clinton (Rochester): Lockport, New York.

Macrostylocrinus semiradiatus (Hall).

Actinocrinus (Saccocrinus) semiradiatus Hall, 20th Rep. New York State Cab. Nat. Hist., 1868, p. 379, pl. 10(1), fig. 1; rev. ed., 1870, p. 370, pl. 10, fig. 1.

Periechocrinus semiradiatus Wachsmuth and Springer, Proc. Acad. Nat. Sci. Philadelphia, 1881, p. 307 (Rev. Pal., pt. 2, p. 133).

Saccocrinus semiradiatus Miller, N. A. Geol. Pal., 1889, p. 279.

Macrostylocrinus semiradiatus Wachsmuth and Springer, Mem. Mus. Comp. Zool., Harvard, 21, 1897, p. 521.—Weller, Bull. Chicago Acad. Sci., Nat. Hist. Surv., 4, 1900, p. 94, pl. 4, fig. 9.

Niagaran (Racine): Racine, Wisconsin; Bridgeport, Illinois.

Macrostylocrinus striatus Hall.

Macrostylocrinus striatus Hall, Trans. Albany Inst., 4, 1863, p. 207 (Abstract, p. 13); 20th Rep. New York State Cab. Nat. Hist. (extras, March, 1865), p. 327, pl. 10 (1), figs. 7, 8; rev. ed., 1870, p. 371, pl. 10, figs. 7, 8; 28th Rep. New York State Mus. Nat. Hist., doc. ed., 1877, pl. 13, figs. 1-4; rev. ed., 1879, p. 129, pl. 13, figs. 1-4; 11th Ann. Rep. Indiana Dep. Geol. Nat. Hist., 1882, p. 257, pl. 12, figs. 1-4.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 378, figs.—Miller, N. A. Geol. Pal., 1889, p. 259, fig. 356.—Wachsmuth and Springer, Mem. Mus. Comp. Zool. Harvard, 20, 1897, p. 287, pl. 22, fig. 14.—Weller, Bull. Chicago Acad. Sci., Nat. Hist. Surv., 4, pt. 1, 1900, p. 93, pl. 4, figs. 10, 11.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 555.

Ctenocrinus striatus Shumard, Trans. Acad. Sci. St. Louis, 2, 1866, p. 361 (gen. ref.).

Niagaran: Waldron and Hartsville, Indiana (Waldron); Racine, Wisconsin, and Bridgeport, Illinois (Racine).

MACROSTYLOCRINUS STRIATUS var. GRANULOSUS Hall. See Macrostylocrinus granulosus.

Macrostylocrinus subglobosus Weller.

Macrostylocrinus subglobosus Weller, Bull. Chicago Acad. Sci., Nat. Hist. Surv., 4, pt. 1, 1900, p. 96, pl. 4, fig. 8.

Niagaran (Racine): Bridgeport, Illinois.

MACROSTYLOCRINUS WALDRONENSIS Wachsmuth and Springer. See Dimerocrinus waldronensis.

MADREPORA INTERSTINCTA Linnæus. See Heliolites interstinctus.

MADREPORA ORGANUM Linnæus. See Syringophyllum organum.

MADREPORITES ARTICULATUS WAHLENBERG. See Cyathophyllum articulatum.

MÆLONOCERAS Hyatt. Genotype: Phragmoceras præmaturum Billings.
Mælonoceras Hyatt, Proc. Boston Soc. Nat. Hist., 22, 1884, p. 280.—Miller, N. A. Geol. Pal., 2d App., 1897, p. 775.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 118.
Meloceras Foord, Cat. Foss. Ceph. British Mus., 1, 1888, p. 262, footnote, p. 269.
Meloceras (Melonoceras) [subgenus of Oncoceras] Hyatt, Zittel-Eastman Textb. Pal., 1900, p. 530; 2d ed., 1913, p. 611.

Mælonoceras arcticameratum (Hall).
Cyrtoceras arcticameratum Hall, Pal. New York, 2, 1852, p. 349, pl. 84, figs. 7a-d.—Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 2, 1895, p. 103.—Clarke and Ruedemann, Mem. New York State Mus., 5, 1903, p. 87, pl. 15, figs. 1, 2; pl. 16, figs. 1-7.
Cyrtoceras (Meloceras) arcticameratum Foord, Cat. Foss. Ceph. British Mus., 1, 1888, p. 288.
Mælonoceras arcticameratum Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 119, fig. 1356.
Niagaran (Guelph): Galt, Ontario; Rochester, New York; Cedarburg, Wisconsin.

Mælonoceras falx (Billings).
Cyrtoceras falx Billings, Geol. Surv. Canada, Rep. Progr. for 1853–1856, 1857, p. 314.—Salter, Geol. Surv. Canada, dec. 1, 1859, p. 32, pl. 7, fig. 1–4.
Cyrtoceras (Meloceras) falx Foord, Cat. Foss. Ceph. British Mus., 1, 1888, p. 270.
Black River (Leray): Pauquettes Rapids, Ottawa River, Canada.

Mælonoceras metellus (Billings).
Cyrtoceras Metellus Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 191, fig. 175.
Mælonoceras metellus Hyatt, Proc. Boston Soc. Nat. Hist., 22, 1884, p. 280 (gen. ref.).
Canadian (Levis-Limestone): Point Levis, Quebec.

Mælonoceras neleus (Hall).
Cyrtoceras neleus Hall, Rep. Supt. Geol. Surv. Wisconsin, 1861, p. 40.—Whitfield, Mem. Amer. Mus. Nat. Hist., 1, pt. 2, 1895, p. 65, pl. 9, figs. 10, 11.—Clarke Geol. Minnesota, 3, pt. 2, 1897, p. 804, pl. 59, figs. 17-20.
Mælonoceras neleus Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 118, fig. 1355.
Black River (Platteville): Beloit, Wisconsin; Cannon Falls, etc., Minnesota.
Trenton (Prosser): Wykoff, Minnesota.

Mælonoceras præmaturum (Billings).
Phragmoceras præmaturum Billings, Canadian Nat. Geol., 5, 1860, p. 173, figs. 19, 20.—Chapman, Canadian Jour., n. s., 8, 1863, p. 22, fig. 133; p. 198, fig. 175; Expos. Min. Geol. Canada, 1864, p. 130, fig. 133; p. 170, fig. 175.
Mælonoceras præmaturum Hyatt, Proc. Boston Soc. Nat. Hist., 22, 1884, p. 280 (gen. ref.).
Black River: Le Cloche Island, Lake Huron; La Petite Chaudiere Rapids and Pauquette's Rapids, Ottawa River, Canada (Leray).

MALOCYSTIS HAECKEL. See Malocystites Billings.

MALOCYSTITES Billings. Genotype: M. murchisoni Billings.

Malocystites Billings, Geol. Surv. Canada, dec. 3, 1858, p. 66.—Hall, Pal. New York, 3, 1859, p. 152.—Chapman, Expos. Min. Geol. Canada, 1864, p. 109.—Zittel, Handb. Pal., 1, 1879, p. 413.—Miller, N. A. Geol. Pal., 1889, p. 259.—Jaekel, Zeits. d. d. geol. Gesell., 53, 1900, p. 674.—Bather, Treatise on Zool. (Lankester), pt. 3, 1900, p. 58.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 471.

Malocystis Haeckel, Amphor. und Cystoid., Leipzig, 1896, p. 105.

MALOCYSTITES BARRANDI Billings. See Canadocystis barrandi.

MALOCYSTITES EMMONSI Hudson. See Canadocystis emmonsi.

Malocystites murchisoni Billings.

Malocystites Murchisoni Billings, Geol. Surv. Canada, dec. 3, 1858, p. 66, pl. 7, figs. 1a–i.—Chapman, Expos. Min. Geol. Canada, 1864, p. 109.—Miller, N. A. Geol. Pal., 1889, p. 259, fig. 357.—Jaekel, Zeits. d. d. geol. Gesell., 52, 1900, p. 675, fig. 10.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 471, fig. 1782.

Malocystis Murchisoni Haeckel, Amphor. u. Cystoid., Leipzig, 1896, p. 105.

Chazyan: Caughnawaga and Island of Montreal, Canada.

MARIACRINUS Hall. Genotype: M. plumosus Hall.

Astrocrinites Conrad, Cat. Ann. Geol. Rep. New York, 1841, p. 34. (Not defined; also preoccupied.)

Mariacrinus Hall, Amer. Jour. Sci. Arts, 2d ser., 25, 1858, p. 278; Pal. New York, 3, 1861, pp. 104, 139.—Salter, Cat. Camb. and Sil. Foss., 1873, p. 122.—Wachsmuth and Springer, Proc. Acad. Nat. Sci. Philadelphia, 1881, pp. 270, 288, 292, 407 (Rev. Pal., pt. 2, pp. 96, 114, 118, 233); ibid., 1885, p. 326.—Miller, N. A. Geol. Pal., 1889, p. 259.—James, J. F. (part), Jour. Cincinnati Soc. Nat. Hist., 19, 1897, pp. 117, 118.—Wachsmuth and Springer, Mem. Mus. Comp. Zool., Harvard, 20, 1897, p. 281.—Whidborne, Mon. Dev. Fauna South England, 3, Pal. Soc., 1898, p. 219.—Weller, Bull. Chicago Acad. Sci., Nat. Hist. Surv., 4, pt. 1, 1900, p. 98.—Wachsmuth, Zittel-Eastman Textb. Pal., 1, 1900, p. 147.—Springer, ibid., 2d ed., 1913, p. 190.—Bather, Treatise on Zool., pt. 3, Echinoderma, London, 1900, p. 161, fig. 74, 1.—Talbot, Amer. Jour. Sci., 4th ser., 20, 1905, p. 25.—Zittel, Grundzuge Pal., 1, 1910, p. 163.

Mariacrinus aureatus Miller.

Mariacrinus aureatus Miller, 17th Ann. Rep. Indiana Dep. Geol. Nat. Res., 1892, p. 644, pl. 6, fig. 36 (adv. sheets, 1891, p. 34).—Wachsmuth and Springer, Mem. Mus. Comp. Zool., Harvard, 20, 1897, p. 285.

Niagaran (Laurel): St. Paul, Indiana.

Mariacrinus beecheri Talbot.

Mariacrinus beecheri Talbot, Amer. Jour. Sci., 20, 1905, p. 25, pl. 1, fig. 3; fig. 2.

Helderbergian (Manlius transition beds or Coeymans): North Litchfield, New York.

Mariacrinus carleyi (Hall).

Glyptocrinus carleyi Hall, Trans. Albany Inst., 4, 1863, p. 203.—Winchell and Marcy, Mem. Boston Soc. Nat. Hist., 1, 1865, p. 90.—Hall, 28th Rep. New York State Mus. Nat. Hist., doc. ed., 1875, 1877, pl. 14, figs. 7–10; mus. ed., 1879, p. 132, pl. 14, figs. 7–10; 11th Ann. Rep. Indiana Dep. Geol. Nat. Hist., 1882, p. 261, pl. 13, figs. 7–10; pl. 15, fig. 5.

Mariacrinus carleyi—Continued.

Mariacrinus carleyi Wachsmuth and Springer, Proc. Acad. Nat. Sci. Philadelphia, 1881, p. 290 (Rev. Pal., pt. 2, p. 116).—Miller, N. A. Geol. Pal., 1889, p. 260, fig. 358.—Wachsmuth and Springer, Mem. Mus. Comp. Zool., Harvard, 20, 1897, p. 282, pl. 22, figs. 2a–c.

Niagaran (Waldron): Waldron and Hartsville, Indiana; Newsom, Tennessee.

Plesiotype.—Cat. No. 40893, U.S.N.M.

Mariacrinus? granulosus Miller.

Mariacrinus granulosus Miller, 17th Rep. Indiana Dep. Geol. Nat. Res., 1892, p. 645, pl. 6, fig. 35 (adv. sheets, 1891, p. 35).

Niagaran (Laurel): St. Paul, Indiana.

MARIACRINUS HARRISI Wachsmuth and Springer. See Compsocrinus harrisi.

MARIACRINUS NOBILISSIMUS Hall. See Melocrinus nobilissimus.

MARIACRINUS OBCONICUS Wachsmuth and Springer. See Melocrinus obconicus.

MARIACRINUS PACHYDACTYLUS Hall. See Melocrinus pachydactylus.

MARIACRINUS PAUCIDACTYLUS Hall. See Melocrinus pachydactylus.

Mariacrinus warreni Ringueberg.

Mariacrinus warreni Ringueberg, Proc. Acad. Nat. Sci. Philadelphia, 1888, p. 133, pl. 7, fig. 4.—Wachsmuth and Springer, Mem. Mus. Comp. Zool., Harvard, 20, 1897, p. 283, pl. 22, fig. 1.

Clinton (Rochester): Lockport, New York.

MARSIPOCRINUS Bather. Genotype: Marsupiocrinites cælatus Phillips.

Marsupiocrinites Phillips, in Murchison's Sil. Syst., 1839, p. 672.—Austin, Ann. Mag. Nat. Hist., 10, 1842, p. 109.—Meek and Worthen, Geol. Surv. Illinois, 2, 1866, p. 172.

Marsupiocrinus McCoy, British Pal. Rocks and Foss., 1854, p. 54.—Pictet, Traité de Pal., 2d ed., 4, 1857, p. 332.—Dujardin and Hupé, Hist. Nat. des Zooph., 1860, p. 149.—Salter, Cat. Camb. Sil. Foss., p. 119.—Angelin, Icon. Crin., 1878, p. 2.—Zittel, Handb. Pal., 1, 1879, p. 365.—Wachsmuth and Springer, Proc. Acad. Nat. Sci. Philadelphia, 1881, pp. 237, 404 (Rev. Pal., 2, pp. 63, 230); ibid., 1888, p. 373; ibid., 1890, p. 351.—Miller, N. A. Geol. Pal., 1889, p. 260.—Wachsmuth, Zittel-Eastman Textb. Pal., 1896, p. 139.—Wachsmuth and Springer, Mem. Mus. Comp. Zool., Harvard, 21, 1897, p. 730.—Weller, Bull. Chicago Acad. Sci., Nat. Hist. Surv., 4, pt. 1, p. 137, fig. 50.

Marsipocrinus Bather, Quart. Jour. Geol. Soc. London, 45, 1889, p. 173; Treatise on Zool., pt. 3, Echinoderma, London, 1900, p. 156, fig. 70.—Wood, Bull. U. S. Nat. Mus., 64, 1909, p. 30.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 516.

Cupellæcrinites Troost, Amer. Jour. Sci. Arts, 2d ser., 8, 1849, p. 419; Proc. Amer. Assoc. Adv. Sci., 2, 1850, p. 61 (not defined). (Genotype: C. Verneuili Troost.)

Cupellæcrinus Meek and Worthen, Proc. Acad. Nat. Sci. Philadelphia, 1865, p. 161; Geol. Surv. Illinois, 2, 1866, p. 172.

Cupellæcrinus Shumard, Trans. Acad. Sci. St. Louis, 2, 1866, p. 361; p. 387, footnote.—Meek, Amer. Jour. Sci. Arts, 2d ser., 42, 1866, p. 118.—Zittel, Handb. Pal., 1, 1879, p. 365.—Bather, Treatise on Zool. (Lankester), pt. 3, 1890, p. 156.

Marsipocrinus chicagoensis (Weller).
Marsupiocrinus chicagoensis Weller, Bull. Chicago Acad. Sci., Nat. Hist. Surv., 4, pt. 1, 1900, p. 138, pl. 14, figs. 2, 3.
Niagaran (Racine): Chicago, Illinois.

Marsipocrinus corrugatus (Troost).
Cupellæcrinites corrugatus Troost, Amer. Jour. Sci. Arts, 2d ser., 8, 1849, p. 419.—Proc. Amer. Assoc. Adv. Sci., 2, 1850, p. 61 (nom. nud.).
Cupellæcrinus corrugatus Shumard, Trans. Acad. Sci. St. Louis, 2, 1866, p. 361.
Marsipocrinus corrugatus Wood, Bull. U. S. Nat. Mus., 64, 1909, p. 35, pl. 10, fig. 8.
Niagaran (Brownsport): Decatur County, Tennessee:
Holotype.—Cat. No. 39930, U.S.N.M.

Marsipocrinus magnificus (Troost).
Cupellæcrinites magnificus Troost, Proc. Amer. Assoc. Adv. Sci., 2, 1850, p. 61 (nom. nud.).
Cupellæcrinus magnificus Shumard, Trans. Acad. Sci. St. Louis, 2, 1866, p. 361.
Marsipocrinus magnificus Wood, Bull. U. S. Nat. Mus., 64, 1909, p. 34, pl. 10, figs. 5, 6, 7.
Niagaran (Brownsport): Decatur County, Tennessee.
Holotype.—Cat. No. 39927, U.S.N.M.

Marsipocrinus pentagonalis (Troost).
Cupellæcrinites pentagonalis Troost, Amer. Jour. Sci Arts, 2d ser., 8, 1849, p. 419 (nom. nud.); Proc. Amer. Assoc. Adv. Sci., 2, p. 61.
Cupellæcrinus pentagonalis Shumard, Trans. Acad. Sci. St. Louis, 2, 1856, p. 381.
Marsipocrinus pentagonalis Wood, Bull. U. S. Nat. Mus., 64, 1909, p. 37.
Niagaran (Brownsport): Perry County, Tennessee.
Holotype.—Cat. No. 39931, U.S.N.M.

Marsipocrinus præmaturus (Hall and Whitfield).
Platycrinus præmaturus Hall and Whitfield, Geol. Surv. Ohio, Pal. 2, 1875, p. 124, pl. 6, figs. 3-6.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 689, figs.
Marsupiocrinus præmaturus Wachsmuth and Springer, Proc. Acad. Nat. Sci. Philadelphia, 1885, p. 337 (Rev. Pal., pt. 3, sec. 1, p. 115); Mem. Mus. Comp. Zool. Harvard, 21, 1897, p. 734, pl. 72, fig. 11.
Marsipocrinus præmaturus Grabau and Shimer, N. A. Index Fossils, 2, p. 516, fig. 1838.
Niagaran (Guelph): Near Greenville and Cedarville, Ohio.

Marsipocrinus rosæformis (Troost).
Cupellæcrinites rosæformis Troost, Amer. Jour. Sci. Arts, 2d ser., 8, 1849, p. 419; Proc. Amer. Assoc. Adv. Sci., 2, p. 61 (nom. nud.).
Cupellæcrinus rosæformis Shumard, Trans. Acad. Sci. St. Louis, 2, 1866, p. 361.
Marsipocrinus rosæformis Wood, Bull. U. S. Nat. Mus., 64, 1909, p. 37, pl. 13, figs. 5, 6.
Niagaran (Brownsport): Perry County, Tennessee.
Holotype.—Cat. No. 39932, U.S.N.M.

Marsipocrinus stellatus (Troost).
Cupellæcrinites stellatus Troost, Amer. Jour. Sci. Arts, 2d ser., 8, p. 419 (nom. nud.); Proc. Amer. Assoc. Adv. Sci., 2, 1850, p. 61 (nom. nud.).
Cupellæcrinus stellatus Shumard, Trans. Acad. Sci. St. Louis, 2, 1866, p. 361.
Marsipocrinus stellatus Wood, Bull. U. S. Nat. Mus., 64, 1909, p. 36, pl. 10, figs. 1, 2.
Niagaran (Brownsport): Perry or Decatur County, Tennessee.
Holotype.—Cat. No. 39929, U.S.N.M.

Marsipocrinus striatus (Troost).
Cupellæcrinites striatus Troost, Amer. Jour. Sci. Arts, 2d ser., 8, 1849, p. 419; Proc. Amer. Assoc. Adv. Sci., 2, 1850, p. 61 (nom. nud.).
Cupellæcrinites inflatus Troost, Amer. Jour. Sci. Arts, 2d ser., 8, 1849, p. 420; Proc. Amer. Assoc. Adv. Sci., 2, 1850, p. 61 (nom. nud.).
Marsupiocrinus striatus Wachsmuth and Springer, Mem. Mus. Comp. Zool. Harvard, 21, 1897, p. 732, pl. 75, figs. 17, 18.
Marsipocrinus striatus Wood, Bull. U. S. Nat. Mus., 64, 1909, p. 33, pl. 9, figs. 13, 14.
Niagaran (Brownsport): Decatur County, Tennessee.
Holotype and *plesiotype*.—Cat. Nos. 39926, 39934, U.S.N.M.

Marsipocrinus tennesseensis (Roemer).
Platycrinus tennesseensis Roemer, Sil. Fauna West. Tennessee, Breslau, 1860, p. 35, pl. 3, fig. 4a–f.
Platycrinus (Cupellacrinus) tennesseensis Shumard, Trans. Acad. Sci. St. Louis, 1866, p. 362.
Marsupiocrinus tennesseensis Wachsmuth and Springer, Proc. Acad. Nat. Sci. Philadelphia, 1881, p. 239 (Rev. Pal., pt. 2, p. 65); ibid., 1888, p. 373, pl. 19, fig. 7; Mem. Mus. Comp. Zool., Harvard, 21, 1897, p. 731, pl. 75, fig. 16a, b.
Marsipocrinus tennesseensis Wood, Bull. U. S. Nat. Mus., 64, 1909, p. 30, pl. 9, figs. 5, 6.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 516, 1837.
Cupellæcrinites Buchii Troost, Amer. Jour. Sci. Arts, 2d ser., 8, 1849, p. 419; Proc. Amer. Assoc. Adv. Sci., 2, 1850, p. 61 (nom. nud.).
Cupellæcrinites laevis Troost, Amer. Jour. Sci. Arts, 2d ser., 7, 1849, p. 419; Proc. Amer. Assoc. Adv. Sci., 2, 1850, p. 61 (nom. nud.).
Cupellæcrinus laevis Shumard, Trans. Acad. Sci. St. Louis, 2, 1866, p. 361 (gen. ref.).
Niagaran (Brownsport): Decatur County, Tennessee.
Plesiotypes.—Cat. Nos. 39925, 39928, U.S.N.M. (Troost's types of C. lævis and C. buchi.)

Marsipocrinus verneuili (Troost).
Cupellæcrinites Verneuli Troost, Amer. Jour. Sci. Arts, 2d ser., 8, 1849, p. 419; Proc. Amer. Assoc. Adv. Sci., 2, 1850, p. 61 (nom. nud.).
Marsipocrinus verneuili Wood, Bull. U. S. Nat. Mus., 64, 1909, p. 32, pl. 9, figs. 10, 11, 12.
Niagaran (Brownsport): Decatur County, Tennessee.
Holotype and *plesiotype*.—Cat. No. 39914, U.S.N.M.

MARSUPIOCRINITES Phillips. See Marsipocrinus Bather.

MARSUPIOCRINITES(?) DACTYLUS Hall. See **Lyriocrinus dactylus.**

MARSUPIOCRINUS Phillips. See Marsipocrinus Bather.

MASTIGOGRAPTUS Ruedemann.
Genotype: Dendrograptus tenuiramosus Walcott.
Mastigograptus Ruedemann, Mem. New York State Mus., 11, pt. 2, 1908, pp. 210–216.

Mastigograptus arundinaceus (Hall).
Graptolithus arundinaceus Hall, Pal. New York, 1, 1847, pl. 74, figs. 8, 8a.
Dicranograptus arundinaceus Hall, 20th Rep. New York State Cab. Nat. Hist., 1868, p. 227; rev. ed., p. 261.

Mastigograptus arundinaceus—Continued.
Dendrograptus arundinaceus Gurley, Jour. Geol., 4, 1896, 84.
Mastigograptus arundinaceus Ruedemann, Mem. New York State Mus., 11, pt. 2, 1908, pp. 221, 222, pl. 12, fig. 6, fig. 119.
Utica: Turin, Lewis County, New York.

Mastigograptus circinalis Ruedemann.
Dendrograptus sp. Ruedemann, Bull. New York State Mus., 42, 1901, p. 528.
Mastigograptus circinalis Ruedemann, Mem. New York State Mus., 11, pt. 2, 1908, pp. 222, 223, pl. 10, fig. 3; pl. 12, figs. 7, 8.
Trenton (Canajoharie): Rural cemetery, near Albany, New York.

Mastigograptus? flaccidus Ruedemann.
Mastigograptus? flaccidus Ruedemann, Bull. New York State Mus., 133, 1909, p. 207, pl. 3, fig. 6.
Black River (Lowville): Glens Falls, New York.

Mastigograptus gracillimus (Lesquereux).
Psilophytum gracillimum Lesquereux, Proc. Amer. Phil. Soc., 17, 1877, p. 164, pl. 1, fig. 2.
Psilophyton gracillimum Miller, Proc. Davenport Acad. Sci., 2, 1878, p. 206.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 805, figs.
Dendrograptus (Psilophyton) gracillimus Walcott, Trans. Alb. Inst., 10, 1883, 21.
Dendrograptus gracillimus Ulrich, Cat. Foss. Cincinnati Group, 1880.—James, Jour. Cincinnati Soc. Nat. Hist., 1885, p. 160; pl. 9, figs. 5, 6; ibid., 14, pt. 2, 1892, p. 149.—Gurley, Jour. Geol., 4, 1896, 95.—Nickles, Jour. Cincinnati Soc. Nat. Hist., 20, 1902, p. 68.
Mastigograptus gracillimus Ruedemann, Mem. New York State Mus., 11, pt. 2, 1908, pp. 219–221, figs. 116–118.
Eden and Maysville (Fairmount): Cincinnati, Ohio, and vicinity.

Mastigograptus simplex (Walcott).
Dendrograptus simplex Walcott, Trans. Alb. Inst., 10, 1883, p. 20; pl. 1, figs. 5, 5a, 5b, 6 (adv. sheets, 1879); Bull. Geol. Soc. Amer., 1, 1890, p. 347.—Ami, Can. Rec. Sci., 5, 1892.—Gurley, Jour. Geol., 4, 1896, p. 300.
Mastigograptus simplex Ruedemann, Mem. New York State Mus., 11, pt. 2, 1908, pp. 218, 219, pl. 9, fig. 1; pl. 12, figs. 3–5; fig. 115.
Utica: Holland Patent, Oneida County, New York; Canada.

Mastigograptus tenuiramosus (Walcott).
Dendrograptus tenuiramosus Walcott, Trans. Alb. Inst., 10, 1881, p. 21, pl. 1, fig. 4 (adv. sheets, 1879).—Ulrich, Cat. Foss. Cincinnati Group, 1880.—James, Cincinnati Soc. Nat. Hist., Man. Pal. Cincinnati Group, pt. 2, 1892, p. 152.—Gurley, Jour. Geol., 4, 1896, p. 300.—Ruedemann, Bull. New York State Mus., 8, 1901, p. 528, footnote.—Nickles, Jour. Cincinnati Soc. Nat. Hist., 20, 1902, p. 70.
Mastigograptus tenuiramosus, Ruedemann, Mem. New York State Mus., 11, pt. 2, 1908, pp. 216–218, pl. 9, figs. 2, 3; pl. 11, figs. 2–4; pl. 12, figs. 1, 2; fig. 114.
Utica: Holland Patent, New York; Covington, Kentucky, etc.
Plesiotype.—Cat. No. 54275, U.S.N.M.

MATHERELLA Walcott. Genotype: Trochus saratogensis Walcott.
Billingsia Walcott (not Dekoninck, 1876), Bull. U. S. Geol. Surv., 30, 1886, pp. 5, 21, 6062; Bull. U. S. Geol. Surv., 81, p. 346.—Miller, N. A. Geol. Pal., p. 398.
Matherella Walcott, Smiths. Misc. Coll., 57, 1912, p. 263.

Matherella saratogensis (Walcott).

Trochus? saratogensis Walcott, Proc. U. S. Nat. Mus., 13, 1890, p. 268, pl. 20, fig. 3.

Billingsia saratogensis Walcott, Bull. U. S. Geol. Surv., 30, 1886, p. 21, ibid., 81, 1891, p. 346.—Miller, N. A. Geol. Pal., 1889, p. 398, fig. 655.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 92, fig.

Matherella saratogensis Walcott, Smiths. Misc. Coll., 57, 1912, p. 264, pl. 41, figs. 18–21.

Ozarkian or Upper Cambrian (Hoyt): Four miles west of Saratoga Springs, New York.

Cotypes—Cat. No. 23847 U.S.N.M.

MATHERIA Billings. Genotype: M. tenera Billings.

Matheria Billings, Can. Nat. Geol., 3, 1858, p. 440; Geol. Surv. Canada, Rep. Progr. for 1857, 1858, p. 188.—Miller, N. A. Geol. Pal., 1889, p. 488.—Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 563.

Matheria brevis Whiteaves.

Matheria brevis Whiteaves, Ottawa Nat., 17, 1903, p. 33, fig. 1, 1a; Geol. Mag., dec. 4, 10, 1903, p. 358, figs. 1, 1a; Geol. Surv. Canada, Pal. Foss., 3, pt. 4, 1906, p. 321, fig. 25.

Trenton: Ottawa, Ontario.

Matheria recta (Hall).

Modiolopsis rectus Hall, 20th Rep. New York State Cab. Hist., 1868 (extras, March, 1865), p. 338, pl. 14 (5), figs. 4, 5, p. 389; rev. ed., 1870, p. 386, pl. 14, figs. 4, 5.—Chamberlin, Geol. Wisconsin, 1, 1883, p. 192, figs.

Clidophorus m'chesneyanus Winchell and Marcy, Mem. Boston Soc. Nat. Hist., 1, 1865, p. 96, pl. 3, fig. 3; p. 109.

Niagaran (Racine): Racine, Wisconsin; Bridgeport, Illinois.

Matheria rugosa Ulrich.

Matheria rugosa Ulrich, 19th Ann. Rep. Geol. Nat. Hist. Surv. Minnesota, 1892, p. 241, fig. 26; Geol. Minnesota, 3, pt. 2, 1894, p. 563, pl. 36, figs. 29, 30; fig. 35, 2 (p. 477).

Trenton (Prosser): Six miles south of Cannon Falls, Minnesota.

Holotype.—Cat. No. 46226, U.S.N.M.

Matheria tenera Billings.

Matheria tener Billings, Geol. Surv. Canada, Rep. Progr. for 1857, 1858, p. 188, fig. 18; Canadian Nat. Geol., 3, 1858, p. 440, fig. 18; Geol. Canada, Geol. Surv. Canada, 1863, p. 147, fig. 100, a–d.—Miller, N. A. Geol. Pal., 1889, p. 488, fig. 846.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 380, figs.

Trenton: Blue Point, Lake St. John, Canada.

MATTHEVIA Walcott. Genotype: M. variabilis Walcott.

Matthevia Walcott, Amer. Jour. Sci. Arts, 3d ser., 30, 1885, pp. 17, 18; Bull. U. S. Geol. Surv., 30, 1886, p. 223.—Miller, N. A. Geol. Pal., 1889, p. 392.

Matthevia variabilis Walcott.

Matthevia variabilis Walcott, Amer. Jour. Sci., 3d ser., 30, 1885, p. 18, figs. 1–6, p. 20; Bull. U. S. Geol. Surv., 30, 1886, pp. 224–225, pl. 32, figs. 1–12; pl. 33, figs. 1, 1a, 1f.—Miller, N. A. Geol. Pal., 1889, p. 392, fig. 647.—Lesley, Geol. Surv. Pennsylvania, Rep., P 4, 1889, p. 381, fig.—Walcott, Smiths. Misc. Coll., 57, 1912, p. 265, pl. 42, figs. 1–15.

Ozarkian or Upper Cambrian (Hoyt): Four miles west of Saratoga Springs, New York.

Cotypes.—Cat. No. 24598, U.S.N.M.

MEEKOCYSTIS Jaekel. See Lepadocystis Carpenter.

MEEKOPORA Ulrich. Genotype: Meekopora eximia Ulrich.

Meekopora Ulrich, Geol. Surv. Illinois, 8, 1890, pp. 383, 482.—(Ulrich, in press), Miller, N. A. Geol. Pal., 1889, p. 312.—Ulrich, Zittel's Textb. Pal. (Engl. ed.), 1896, p. 270.—Simpson, 14th Ann. Rep. State Geol. New York for 1894, p. 538.—Nickles and Bassler, Bull. U. S. Geol. Surv., 173, p. 26.—Condra, Nebraska Geol. Surv., 2, pt. 1, p. 35.—Bassler, Bull. U. S. Geol. Surv., 292, p. 25; Zittel-Eastman Textb. Pal., 1913, p. 330.

Meekopora bassleri Foerste.

Meekopora bassleri Foerste, Bull. Kentucky Geol. Surv., 7, 1906, p. 297, pl. 6, figs. 1a, b.

Clinton (Waco): Near Estil Springs, north of Irvine, etc., Kentucky.

Meekopora foliacea (Hall).

Ceramopora foliacea Hall, Pal. New York, 2, 1852, p. 170, pl. 40E, figs. 3a-c.—Rominger, Proc. Acad. Nat. Sci. Philadelphia, p. 119.

Meekopora foliacea Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 312.—Bassler, Bull. U. S. Geol. Surv., 292, 1906, pp. 25, 26, pl. 8, figs. 5, 6; pl. 9, figs. 5, 6.

Clinton (Rochester): Lockport, Rochester, etc., New York; Grimsby, Ontario.

Plesiotype.—Cat. No. 44116, U.S.N.M.

MEEKOSPIRA Ulrich. Genotype: Eulima? peracuta Meek and Worthen.

Meekospira Ulrich, Geol. Minnesota, 3, pt. 2, 1897, p. 1079.

Meekospira planilateralis (Foerste).

Subulites (Polyphemopsis) plani-lateralis Foerste, Geol. Surv. Ohio, Pal., 7, 1893, p. 555, p. 37a, figs. 4a-c.

Meekospira planilateralis Ulrich, Geol. Minnesota, 3, pt. 2, 1897, p. 1079 (gen. ref.).

Upper Medinan (Brassfield): Soldiers' Home, near Dayton, Ohio.

Meekospira subconica Ulrich and Scofield.

Meekospira subconica Ulrich and Schofield, Geol. Minnesota, 3, pt. 2, 1897, p. 1080, pl. 81, figs. 40, 41.

Subulites subconicus Miller, N. A. Geol. Pal., 2d App., 1897, p. 770 (gen. ref.).

Richmond (Maquoketa): Spring Valley, Minnesota.

Holotype.—Cat. No. 45942, U.S.N.M.

MEGACYSTIS Angelin. See Holocystites Hall.

MEGACYSTITES Hall. See Holocystites Hall.

MEGALASPIS Angelin. Genotype: Megalaspis gigas Angelin.

Megalaspis Angelin, Pal. Scandinavica, 3d ed., Holmiae, 1878, p. 15.—Salter, Mon. British Tril., Pal. Soc., 1866, p. 147.—Zittel, Handb. Pal., 2, M., 1885, p. 608.—Brögger, Bihang till K. Sven. Vet.-Akad. Handl., 11, No. 3, 1886, p. 40; Afh. Sveriges Geol. Unders., ser. C, No. 82, 1886, p. 40.—Miller, N. A. Geol. Pal., 1889, p. 555.—Koken, Die Leitfossilien, Leipzig, 1896, p. 26, text fig. 16, figs. 3, 6.—Schmidt, Mem. l'Acad. Imp. Sci. St. Petersburg, 8th ser., 6, 1898, pp. 11, 12, 35.—Lindstrom, Kongl. Sven. Vet.-Akad. Handl., 34, No. 8, 1901, pp. 26, 60.—Slocom, Field Mus. Nat. Hist., Geol. Ser., 4, 3, 1913, p. 50.—Raymond, Trans. and Proc. Roy. Soc. Canada, 5, 3d ser., sec. 4, 1912, p. 117; Zittel-Eastman Textb. Pal., 1913, p. 718.

Megalaspis? americana Hoek.

Megalaspis americana Hoek, Neues Jahrb. Min., Geol., Pal., 34, 1912, p. 220, pl. 10, figs. 2-6.

Ordovician: Tarija, Bolivia.

Megalaspis beckeri Slocom.
Megalaspis beckeri Slocom, Field Mus. Nat. Hist., Geol. Ser., 4, 3, p. 50, pl. 14, fig. 5.
Richmond (Maquoketa): Clermont, and Postville Junction, Iowa.

Megalaspis belemnurus White.
Megalaspis belemnurus White, Rep. U. S. Geol. Surv. West 100th Merid., 4, War Dep., 1877, p. 58, pl. 3, fig. 9 (Rep. 1874, p. 11).—Miller, N. A. Geol. Pal., 1889, p. 556, fig. 1030.
Upper Pogonip: Queen Spring Hill, Schell Creek Range, Nevada.
Holotype.—Cat. No. 8562, U.S.N.M.

Megalaspis? boliviensis (D'Orbigny).
Asaphus boliviensis D'Orbigny, Voyage l'Amerique Merid., 3, pt. 4, 1847, p. 32, Atlas, pl. 1, figs. 8, 9.
Silurian: Rio Grande, Province de Vallegrande; Tacopaya and Cochabamba, Bolivia.

Megalaspis brackenbuschi Kayser.
Megalaspis Brackenbuschi Kayser, Zeit. d. deutsch. geol. Gesell, 50, 1898, p. 428, pl. 16, fig. 3.
Ordovician: Salta, Argentina.

Megalaspis goniocercus (Meek).
Asaphus (Megalaspis) goniocercus Meek, 6th Ann. Rep. U. S. Geol. Surv., Terr., 1873, p. 480.
Lower Ordovician: Near Malade City, Utah.
Holotype.—Cat. No. 11600, U.S.N.M.

Megalaspis goniurus (Billings).
Asaphus goniurus Billings, Canadian Nat. Geol., 5, 1860, p. 324; Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 415.
Megalaspis goniurus Raymond, Trans. and Proc. Roy. Soc. Canada, 3d ser., 5, sec. 4, 1912, p. 119, pl. 2, fig. 6.
Ozarkian? (Levis-erratics): Point Levis, Quebec.

Megalaspis? matacensis Hoek.
Megalaspis matacensis Hoek, Neues Jahrb. Min., Geol., Pal., 34, 1912, p. 233, pl. 11, figs. 6, 7.
Ordovician: Near Mataca, Bolivia.

MEGALOGRAPTUS Miller. Genotype: M. welchi Miller.
Megalograptus Miller, Cincinnati Quart. Jour. Sci., 1, 1874, pp. 343.—James, Jour. Cincinnati Soc. Nat. Hist., 14, pt. 2, 1892, p. 160.—Miller, N. A. Geol. Pal., 1889, p. 195.—Ruedemann, Mem. New York State Mus., 11, pt. 2, 1908, p. 247.—Clarke and Ruedemann, Mem. New York State Mus., 14, 1912, p. 324.

Megalograptus welchi Miller.
Megalograptus welchi Miller, Cincinnati Quart. Jour. Sci., 1, 1874, pp. 343-346, figs. 35-37; N. A. Geol. Pal., 1889, p. 195, figs. 189, 190, 191.—James, Jour. Cincinnati Soc. Nat. Hist., 14, pt. 2, 1892, p. 161.—Foerste in Clarke and Ruedemann, Mem. New York State Mus., 14, 1912, p. 325, pl. 58, figs. 3-5.
Richmond (Liberty): Near Clarksville, Ohio.

MEGALOMPHALA Ulrich. Genotype: Bellerophon contortus Eichwald.
Megalomphala Ulrich, Geol. Minnesota, 3, pt. 2, 1897, p. 850.—Koken, Neues Jahrb. Min., Geol. Pal., 1898, 1, 1898, p. 9.

Megalomphala robusta Whiteaves.

Megalomphala robusta Whiteaves, Ann. Rep. Geol. Surv. Canada, n. s., 14, App. F, 1904, p. 48; ibid., Pal. Foss., 3, pt. 4, 1906, p. 257, pl. 28, figs. 9, 9a; pl. 29, fig. 1.

Niagaran: Ekwan River, Canada.

MEGALOMPHALA? ROTUNDATA Ulrich. See Bucania sulcatina.

MEGALOMUS Hall. Genotype: M. canadensis Hall.

Megalomus Hall, Pal. New York, 2, 1852, p. 343.—Woodward, Man. Mollusca, pt. 2, p. 302.—Hall, 15th Rep. New York State Cab. Nat. Hist., 1861, p. 193; Prelim. Notice Lam., pt. 2, p. 25, 27.—Miller, N. A. Geol. Pal., 1889, p. 488.

Megalomus canadensis Hall.

Megalomus canadensis Hall, Pal. New York, 2, 1852, p. 343, pl. 80, fig. 1a–e, pl. 81, fig. 1a–f; pl. 82, fig. 1a–i.—Chapman, Canadian Jour., n. s., 7, 1862, p. 117, fig. 113, 113a; ibid., 8, 1863, p. 215, fig. 225; Expos. Min. Geol. Canada, p. 120, figs. 113, 113a; p. 187, fig. 225.—Hall, 1st Rep. State Geol. New York, 1884, pl. 9, fig. 16.—Billings, Geol. Canada, Geol. Surv. Canada, 1863, p. 338, fig. 342.—Nicholson, Rep. Pal. Prov. Ontario, pt. 2, 1875, p. 68, fig. 39.—Chamberlin, Geol. Wisconsin, 1, 1883, p. 193, fig.—Hall, 1st Rep. State Geol. New York, 1884, pl. 9, fig. 16; Pal. New York, 5, pt. 1, 1885, pl. 52, fig. 10 (adv. copy, 1883).—Miller, N. A. Geol. Pal., 1889, p. 488, fig. 847.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 383, fig.—Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 2, 1895, p. 66.—Norton, Proc. Iowa Acad. Sci., 2, 1895, p. 42.

Cyrtodonta canadensis Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 410, fig. 530.

Niagaran (Guelph): Galt, etc., Ontario; Ohio; Wisconsin; Alaska.

Megalomus compressus Nicholson and Hinde.

Megalomus compressus Nicholson and Hinde, Canadian Jour., n. s., 14, 1874, p. 143, fig. 6.—Nicholson, Rep. Pal. Prov. Ontario, pt. 2, 1875, p. 69, fig. 40.—Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 1, 1884, p. 10, fig. 1; ibid., pt. 2, 1895, p. 67 (loc. occ.).

Niagaran (Guelph): Hespeler, Ontario.

MEGAMBONIA Hall. Genotype: M. cardiiformis Hall.

Megambonia Hall, 12th Rep. New York State Cab. Nat. Hist., 1859, p. 12; ibid., 15th Rep., 1861, p. 193.—Meek, Geol. Surv. Ohio, Pal., 1, 1873, p. 137–8.—Miller, Cincinnati Quart. Jour. Sci., 1, 1874, p. 225.—Zittel, Handb. Pal., 2, 1881, p. 51.—Hall, Pal. New York, 5, pt. 1, Lam., 2, 1885, p. lv.—Miller, N. A. Geol. Pal., 1889, p. 488.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 411.

MEGAMBONIA Meek. See Allonychia Ulrich.

Megambonia aviculoidea Hall.

Megambonia aviculoidea Hall, Pal. New York, 3, 1859, p. 274, pl. 49, figs. 7a, 7b, 8; pl. 49A, fig. 8.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 387, fig.—Weller, Geol. Surv. New Jersey, Pal., 3, 1903, p. 263, pl. 24, figs. 17, 18.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 411, fig. 531.

Pterinea cf. aviculoidea Holtedahl, 2d Arctic Exp. "Fram." 1898–1902, No. 32, 1914, p. 28, pl. 8, fig. 6.

Helderbergian: Helderberg Mountains, etc., New York (Coeymans and Manlius transition beds); New Jersey (Keyser—"Manlius"); Southwestern Ellesmereland, Arctic America.

Megambonia cancellata Hall.
Megambonia cancellata Hall, Can. Nat. Geol., 5, 1860, p. 153.—Dawson, Canadian Nat., n. s., 9, 1880, p. 342.
Silurian: Arisaig, Nova Scotia.

MEGAMBONIA JAMESI Meek. See Allonychia jamesi.

Megambonia ovoidea Hall.
Megambonia ovoidea Hall, Pal. New York, 3, 1859, p. 276, pl. 49A, figs. 4a, 4b.
Cayugan (Manlius): Schoharie County, New York.

Megambonia striata Hall.
Megambonia striata Hall, Can. Nat. Geol., 5, 1860, p. 153.—Dawson, Acadian Geol. 2d ed., 1868, p. 603.
Silurian: Arisaig, Nova Scotia.

MEGANTERIS MUTABILIS Hall. See Rensselæria mutabilis.

MEGAPTERA Meek and Worthen. See Opisthoptera Meek.

MEGAPTERA ALATA White. See Anomalodonta alata.

MEGAPTERA CASEI Meek and Worthen. See Anomalodonta casei.

MEGISTOCRINUS CHRISTYI Hall. See Periechocrinus whitfieldi.

MEGISTOCRINUS INFELIX Winchell and Marcy. See Periechocrinus infelix.

MEGISTOCRINUS MARCOUANUS Winchell and Marcy. See Periechocrinus marcouanus.

MEGISTOCRINUS NECIS Winchell and Marcy. See Periechocrinus necis.

Melia cancellatus Emmons. Not recognizable.
Melia cancellatus Emmons, Amer. Geology, 1, pt. 2, 1855, p. 153.
Loraine shales: New York.

Melia cincinnatiæ D'Orbigny. Not recognizable.
Melia cincinnatiæ D'Orbigny, Prod. Pal., 1, 1850, p. 4.
Blue limestone: Cincinnati, Ohio.

MELOCERAS Foord. See Mælonoceras Hyatt.

MELOCRINITES Goldfuss. See Melocrinus Goldfuss.

MELOCRINUS Goldfuss. Genotype: M. hieroglyphicus Goldfuss.
Melocrinites Goldfuss, Petrefacta Germanica, 1826, p. 197; ibid., 2d ed., pt. 1, 1862, p. 183.—Agassiz, Mem. Soc. Sci. Natur. Neuchatel, 1, 1835, p. 196.—Fischer de Waldheim, Oryct. Gouv. Moscou, 1837, p. 150.—Goldfuss, Nova Acta Physico Med., Acad. Caes. Leop.-Carol., 19, 1839, p. 339.—Muller, Monatsb. Berl. Akad., 1, 1841, p. 209.—Portlock, Rep. Geol. Londonderry, 1843, p. 346.—D'Orbigny, Prodr. Pal., 1, 1850, p. 103.—Hall, Pal. New York, 2, 1852, p. 227.—D'Orbigny, Course Element, 2, 1852, p. 140.
Melocrinus Agassiz, Ann. Nat. Hist., 1, 1838, p. 447.—Roemer, Archiv. fur Natur., Jahrg. 19, 1, 1853, p. 214.—Pictet, Traité de Pal., 2d ed., 4, 1857, p. 325.—Schultze, Denk. d. Kais. Akad. der Wiss., Math.-Naturw. Cl., 26, Abth. 2, 1867, p. 173, fig. 12; Mon. Echin. Eifel Kalk, 1867, p. 61.—Beyrich, Ann. Mag. Nat. Hist., 4th ser., 7, 1871, pp. 404, 405, fig.—Hall, Geol. Surv. Ohio, Pal., 2, 1875, p. 158.—Angelin, Icon. Crin. Suec., 1878, p. 19.—Zittel, Handb. Pal., 1, 1879, p. 371.—Miller, N. A. Geol. Pal., 1889, p. 261.—Wachsmuth and Springer, Proc. Acad. Nat. Sci. Philadelphia, 1890, p. 384.—Whidborne,

MELOCRINUS—Continued.

Mon. Dev. Fauna South England, 2, Pal. Soc., 1895, p. 290.—Weller, Bull. Chicago Acad. Sci., Nat. Hist. Surv., 4, pt. 1, 1900, p. 35, fig. 23; p. 97, fig. 44.—Bather, Treatise on Zool., pt. 3, Echinoderma, London, 1900, p. 161, fig. 74, 2.—Wachsmuth, Zittel-Eastman Textb. Pal., 1, 1900, p. 147.—Talbot, Amer. Jour. Sci., 4th ser., 20, 1905, p. 26.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 555.—Springer, Zittel-Eastman Textb. Pal., 2d ed., 1913, p. 190.

Mariacrinus Hall (part), Pal. New York, 3, 1859, p. 104.

Cytocrinus Roemer, Sil. Fauna West Tennessee, Breslau, 1860, p. 46.—Hall, Trans. Albany Inst., 4, 1863, p. 207.—Zittel, Handb. Pal., 1, 1879, p. 368.—Wachsmuth and Springer, Proc. Acad. Nat. Sci. Philadelphia, 1881, pp. 292, 404 (Rev. Pal., pt. 2, pp. 118, 230).—Bather, Treatise on Zool. (Lankester), pt. 3, 1900, p. 161.—Zittel, Grundzuge Pal., 1, 1910, p. 163. (Genotype: C. laevis Roemer.)

Melocrinus æqualis Miller.

Melocrinus æqualis Miller, 18th Ann. Rep. Indiana Dep. Geol. Nat. Res., 1894, p. 302, pl. 5, figs. 11, 12 (adv. sheets, 1892).—Wachsmuth and Springer, Mem. Mus. Comp. Zool., Harvard, 20, 1897, p. 304.

Melocrinus parvus Wachsmuth and Springer, Amer. Geol., 10, 1892, p. 144; Mem. Mus. Comp. Zool., Harvard, 20, 1897, p. 303, pl. 22, fig. 8.

Niagaran (Laurel): St. Paul, Indiana.

MELOCRINUS DACTYLUS Hall. See Lyriocrinus dactylus.

MELOCRINUS LAEVIS Wachsmuth and Springer. See Melocrinus roemeri.

Melocrinus nobilissimus (Hall).

Mariacrinus nobilissimus Hall, Pal. New York, 3, 1859, p. 105, pl. 2, figs. 1–4, pl. 2A, fig. 1.

Melocrinus nobilissimus Wachsmuth and Springer, Proc. Acad Nat. Sci., Philadelphia 33, 1882, p. 296; Mem. Mus. Comp. Zool., Harvard, 20, 1897, p. 295; Atlas, pl. 23, figs. 1a, 2, 3.—Bather, Treatise on Zool., pt. 3, Echinoderma, London, 1900, p. 161, fig. 74, fig. 2.—Talbot, Amer. Jour. Sci., 4th ser., 20, 1905, p. 26, pl. 2.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 556.

Helderbergian (Manlius transition beds): Litchfield, New York.

Melocrinus obconicus Hall.

Melocrinus obconicus Hall, Trans. Albany Inst., 4, 1863, p. 206; 28th Rep. New York State Mus. Nat. Hist., doc. ed., 1877, pl. 14, figs. 11–14; mus. ed., 1879, p. 138, pl. 14, figs. 11–14; 11th Ann. Rep. Indiana Dep. Geol. Nat. Hist., 1882, p. 269, pl. 13, figs. 11–14.—Miller, N. A. Geol. Pal., 1889, p. 261, fig. 363.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 390, figs.—Wachsmuth and Springer, Mem. Mus. Comp. Zool., Harvard, 20, 1, 1897, p. 302, pl. 27, figs. 10a–c.

Niagaran (Waldron): Waldron and Hartsville, Indiana.

Melocrinus oblongus Wachsmuth and Springer.

Melocrinus oblongus Wachsmuth and Springer, Amer. Geol., 10, 1892, p. 143; Mem. Mus. Comp. Zool., Harvard, 20, 1897, p. 300, pl. 22, figs. 9, 12.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 555.—Wood, Bull. U. S. Nat. Mus., 64, 1909, p. 45.

Niagaran: Near Louisville, Kentucky (Louisville); Decatur County, Tennessee (Brownsport); St. Paul, Indiana (Laurel).

Melocrinus obpyramidalis (Winchell and Marcy).
Actinocrinus obpyramidalis Winchell and Marcy, Mem. Boston Soc. Nat. Hist., 1, 1865, p. 87, pl. 2, fig. 4.
Melocrinus obpyramidalis Miller, Jour. Cincinnati Soc. Nat. Hist., 4, 1881, p. 174.—Wachsmuth and Springer, Rev. Pal., pt. 2, 1881, p. 122.—Weller, Bull. Chicago Acad. Sci., Nat. Hist. Surv., 4, 1900, p. 97, pl. 3, figs. 11, 12.
Melocrinus verneuili Hall, 20th Rep. New York State Cab. Nat. Hist., 1868, p. 327, pl. 10 (1), fig. 5, p. 390; rev. ed., 1868 (1870), p. 372, pl. 10, fig. 5. (Extras, 1865.)
Niagaran (Racine): Bridgeport, Hawthorne, etc., Illinois.

Melocrinus pachydactylus (Conrad).
Astrocrinites pachydactylus Conrad, Ann. Rep. Pal. New York, 1841, p. 34.—Mather, Geol. Rep. New York, 1843, p. 347, fig. 6.
Mariacrinus pachydactylus Hall, Pal. New York, 3, 1859, p. 107, pl. 3, figs. 1-4.
Melocrinus pachydactylus Wachsmuth and Springer, Proc. Acad. Nat. Sci. Philadelphia, 33, 1882, p. 296; Mem. Mus. Comp. Zool., Harvard, 20, 1897, p. 296, pl. 23, figs. 4, 5; pl. 24, figs. 4a, b.—Talbot, Amer. Jour. Sci., 20, 1905, p. 27, pl. 1, fig. 1.
Mariacrinus paucidactylus Hall, Pal. New York, 3, 1859, p. 109, pl. 3, fig. 5.
Melocrinus paucidactylus Wachsmuth and Springer, Proc. Acad. Nat. Sci., 33, 1882, p. 296; Mem. Mus. Comp. Zool., Harvard, 20, 1897, p. 296.
Actinocrinus polydactylus Bonny, Schenectady Reflector, 1835; Amer. Jour. Sci. Arts, 1838, p. 165.
Melocrinus (Mariacrinus) pachydactylus Schultze, Monog. Echin., Eifelk., 1866, p. 66.
Melocrinus (Mariacrinus) paucidactylus Schultze, Monog. Echin. Eifelk., 1866, p. 66.
Staghorn Encrinite Bonny, in Shepard's article in Amer. Jour. Sci., 26, 1835, p. 363.
Helderbergian (Manlius transition beds): Schoharie, Jerusalem Hill, and North Litchfield, New York.

Melocrinus parvus Wachsmuth and Springer. See Melocrinus æqualis.

Melocrinus paucidactylus Wachsmuth and Springer. See Melocrinus pachydactylus.

Melocrinus roemeri Wachsmuth and Springer.
Actinocrinites verneuili Troost, Proc. Amer. Assoc. Adv. Sci., 2, 1850, p. 60 (nom. nud.).
Turbinicrinites verneuili Troost MS., 1850.
Melocrinus verneuili Shumard, Trans. Acad. Sci. St. Louis, 2, p. 381 (gen. ref.).
Cytocrinus lævis Roemer (not Goldfuss), Sil. Fauna West. Tennessee, Breslau, 1860, p. 46, pl. 4, figs. 2a-c.
Ctenocrinus lævis Shumard, Trans. Acad. Sci. St. Louis, 2, 1866, p. 361 (gen. ref.).
Melocrinus lævis Wachsmuth and Springer, Proc. Acad. Nat. Sci. Philadelphia, 1881, p. 296 (Rev. Pal., pt. 2, p. 122).
Melocrinus roemeri Wachsmuth and Springer, Amer. Geol., 10, 1892, p. 142; Mem. Mus. Comp. Zool., Harvard, 20, 1897, p. 301, pl. 22, figs. 11a, b.—Wood, Bull. U. S. Nat. Mus., 64, 1909, p. 44, pl. 10, figs. 11, 12.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 556, fig. 1888.
Niagaran (Brownsport): Decatur County, Tennessee.
Plesiotype.—Cat. No. 39919, U.S.N.M. (Troost's type of T. verneuili).

Melocrinus sculptus (Hall).
Melocrinites sculptus Hall, Pal. New York, 2, 1852, p. 228, pl. 49A, figs. 2a–c.
Melocrinus sculptus Miller, N. A. Geol. Pal., 1889, p. 261 (gen. ref.).
Niagaran (Lockport): Lockport, New York.

MELOCRINUS VERNEUILI Hall. See Melocrinus obpyramidalis.

Melocrinus wittenbergensis Rowley.
Melocrinus wittenbergensis Rowley, Amer. Geol., 34, 1904, p. 274, pl. 16, fig. 27.
Niagaran or Helderbergian: Near Wittenberg, Missouri.

MENOCEPHALUS Owen. Genotype: M. minnesotensis Owen.
Menocephalus Owen, Rep. Geol. Surv. Wisconsin, Iowa, Minnesota, 1852, p. 577.—Barrande, Neues Jahrb. Min. Geol. and Pal., 1853, p. 336.—Billings, Canadian Nat. Geol., 5, 1860, p. 313; Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 405.—Miller, N. A. Geol. Pal., 1889, p. 556.

Menocephalus globosus Billings.
Menocephalus globosus Billings, Canadian Nat. Geol., 5, 1860, p. 317, figs. 17–19; Geol. Canada, Geol. Surv. Canada, 1863, p. 237, figs. 267 2–c; Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 408, figs. 388a–c.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 390, figs.
Ozarkian? (Levis-erratic): Point Levis, Quebec.

Menocephalus salteri Devine.
Menocephalus Salteri Devine, Canadian Nat. Geol., 8, 1862, p. 210, fig.—Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 203, fig. 187.—Rominger, Proc. Acad. Nat. Sci. Philadelphia, 1887, p. 16, pl. 1, fig. 6.—Walcott, Amer. Jour. Sci., 3d ser., 36, 1888, p. 166.—Miller, N. A. Geol. Pal., 1889, p. 556, fig. 1032.
Ozarkian? (Levis-erratic): Point Levis, Quebec.

Menocephalus sedgwicki Billings.
Menocephalus sedgwicki Billings, Canadian Nat. Geol., 5, 1860, p. 316, fig. 19; Geol. Canada, Geol. Surv. Canada, 1863, p. 237, fig. 266; Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 407, fig. 387.
Ozarkian? (Levis-erratic): Point Levis, Quebec.

MERISTA Suess. Genotype: Atrypa hercules Barrande.
Merista Suess, Jahrb. Kongl. Kais. Geol. Reichs., 2, 1851, pp. 150, 160.—Hall, 13th Rep. New York State Cab. Nat. Hist., 1860, p. 73; 20th Rep. New York State Cab. Nat. Hist., 1867, p. 258.—Dall, Bull. U. S. Nat. Mus., 8, 1877, p. 47.—Hall and Clarke, Pal. New York, 8, pt. 2, 1893, p. 70, fig. 54; 13th Ann. Rep. New York State Geol., 1895, p. 771.—Schuchert, Zittel-Eastman Textb. Pal., 1913, p. 416.
Camarium Hall, 12th Rep. New York State Cab. Nat. Hist., 1859, p. 42; Pal. New York, 3, 1859, p. 486; 15th Rep. New York State Cab. Nat. Hist., 1862, p. 176.

MERISTA BISULCATA Hall. See Whitfieldella sulcata.

MERISTA CYLINDRICA Hall. See Whitfieldella cylindrica.

MERISTA INTERMEDIA Hall. See Whitfieldella intermedia.

MERISTA LÆVIS Hall. See Whitfieldella lævis.

MERISTA NITIDA Hall. See Whitfieldella nitida.

MERISTA NITIDA var. OBLATA Hall. See Whitfieldella oblata.

MERISTA NUCLEOLATA Hall. See Whitfieldella? nucleolata.

MERISTA SULCATA Miller. See Whitfieldella sulcata.

Merista tennesseensis Hall and Clarke.
Merista tennesseensis Hall and Clarke, Pal. New York, 7, pt. 2, 1895, pp. 71, 365, pl. 42, figs. 1–6.
Niagaran (Brownsport): Perry County, Tennessee.

Merista typa (Hall).
Camarium typum Hall, Pal. New York, 3, 1859, p. 487, pl. 95a, figs. 2a, 3, 5, 6.
Camarium elongatum, ibid., p. 488, pl. 95a, fig. 4.
Merista typa Hall, 13th Ann. Rep. New York State Cab. Nat. Hist., 1860, p. 93, figs. 10–13.—Hall and Clarke, Pal. New York, 8, pt. 2, 1893, pl. 42, figs. 7-12.—Schuchert and Maynard, Maryland Geol. Surv., Low. Dev., 1913, p. 449, pl. 74, figs. 20–24.
Helderbergian (Keyser): Devils Backbone, Cash Valley, etc., near Cumberland, Maryland.

MERISTELLA Hall. Genotype: Merista arcuata Hall.
?Meristella Hall, 12th Rep. New York State Cab. Nat. Hist., 1859, p. 78.
Meristella Hall, 13th Rep. New York State Cab. Nat. Hist., 1860, pp. 74-93; 16th Rep. ibid., 1863, p. 50, figs. 27–34; Trans. Albany Inst., 4, 1863, p. 139; Amer. Jour. Sci., 2d ser., 35, 1863, p. 396; 36, p. 11; 20th Rep. New York State Cab. Nat. Hist., 1867, pp. 155, 258; Pal. New York, 4, 1867, p. 295.—Nettelroth, Kentucky Fossil Shells, Mem. Kentucky Geol. Surv., 1889, p. 97.—Hall and Clarke, Pal. New York, 8, pt. 2, 1893, p. 73, figs. 55, 56; 13th Ann. Rep. New York State Geol., 1895, p. 773.—Schuchert and Maynard, Maryland Geol. Surv., Low. Dev., 1913, p. 442.—Schuchert, Zittel-Eastman Textb. Pal., 1900, p. 341; ibid., 2d ed., 1913, p. 415.
Athyris Billings, Proc. Portland Soc. Nat. Hist., 1863, p. 115.

MERISTELLA BELLA Whitfield. See Hindella? (Greenfieldia) whitfieldi.

MERISTELLA (?MERISTINA) CYLINDRICA Meek. See Whitfieldella cylindrica.

MERISTELLA JULIA Miller. See Whitfieldella(?) julia.

MERISTELLA LÆVIS Hall and Clarke. See Whitfieldella lævis.

MERISTELLA LÆVIS Whitfield (1891). See Whitfieldella prosseri.

MERISTELLA MARIA Hall. See Meristina maria.

MERISTELLA NAVIFORMIS Hall. See Whitfieldella(?) naviformis.

MERISTELLA NITIDA Hall. See Whitfieldella nitida.

MERISTELLA NUCLEOLATA Whitfield. See Whitfieldella(?) nucleolata.

Meristella prænuntia Schuchert and Maynard.
Meristella prænuntia Schuchert and Maynard, Maryland Geol. Surv., Low Dev., 1913, p. 443, pl. 73, figs. 43–46; pl. 74, figs. 1–4.
Helderbergian (Keyser): Keyser, West Virginia; Dawson, Tonoloway, etc., Maryland.

MERISTELLA PRINSTANA Miller. See Hindella prinstana.

MERISTELLA RECTIROSTRA Hall. See Meristina rectrirostris.

MERISTELLA TUMIDA Etheridge. See Meristina maria.

MERISTELLA UMBONATA Foerste. See Hindella umbonata.

MERISTINA Hall. Genotype: Meristella maria Hall.

Meristina Hall, 20th Rep. New York State Cab. Nat. Hist., 1867, p. 157; Pal. New York, 4, 1867, p. 299.—Zittel, Handb. Pal., 1, 1880, p. 686. Davidson, Mon. British Foss. Brach., 5, Sil. Suppl., Pal. Soc., 1882, p. 82; Suppl. p. 95.—Miller, N. A. Geol. Pal., 1889, p. 354.—Nettelroth (part), Kentucky Fossil Shells, Mem. Kentucky Geol. Surv., 1889, p. 101.—Hall and Clarke, Pal. New York, 8, pt. 2, 1893, p. 65; 13th Ann. Rep. New York State Geol., 1895, p. 770.—Koken, Die Leitfossilien, Leipzig, 1896, p. 240, figs. 200, 5.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 351.—Schuchert, Zittel-Eastman Textb. Pal., 1913, p. 415.

Whitfieldia Davidson, Suppl. British Sil. Brach., Pal. Soc., 1882, p. 107.—Beecher and Clarke, Mem. New York State Mus., 1, 1889, p. 73.—Miller, N. A. Geol. Pal., 1889, p. 388.—Koken, Die Leitfossilien, Leipzig, 1896, p. 240, figs. 201, 1, 2.

Meristina(?) expansa Whiteaves.

Meristina(?) expansa Whiteaves, Ann. Rep. Geol. Surv. Canada, n. s., 14, App. F, 1904, p. 45; ibid., Pal. Foss., 3, pt. 4, 1906, p. 245, pl. 27, figs. 6, 7.

Niagaran: Ekwan and Attawapiskat Rivers, Canada.

Meristina maria (Hall).

Meristella maria Hall, Trans. Albany Inst., 4, 1863, p. 212.—Hall and Whitfield, 24th Rep. New York State Cab. Nat. Hist., 1872, p. 196.

Meristina maria Hall, 20th Rep. New York State Cab. Nat. Hist., 1867, p. 157; Pal. New York, 4, 1867, p. 299.—Hall and Whitfield, Pal. Ohio, 2, 1875, p. 132, pl. 7, figs. 5, 6.—Nettelroth, Kentucky Fossil Shells, Mem. Kentucky Geol. Surv., 1889, p. 101, pl. 29, figs. 7–10.—Hall and Clarke, Pal. New York, 8, pt. 2, 1893, p. 67, pl. 41, figs. 1–17.—Kindle and Breger, 28th Rep. Dep. Geol. Nat. Hist. Surv. Indiana, 1904, p. 445, pl. 9, figs. 29–32.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 351, fig. 459.

Meristina (Meristella) maria Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 396, figs.

Meristella tumida Etheridge, Quart. Jour. Geol. Soc. London, 34, 1878, p. 597.

Meristella (Meristina) maria Hall, 28th Rep. New York State Mus. Nat. Hist., 1879, p. 159, pl. 25, figs. 8–12; 11th Rep. State Geol. Indiana, 1882, p. 299, pl. 25, figs. 8–12.

Whitfieldia maria Beecher and Clarke, Mem. New York State Mus., 1, 1889, p. 73, pl. 7, figs. 1–3.—Miller, N. A. Geol. Pal., 1889, p. 388, fig. 639.

Niagaran: Waldron, Indiana (Waldron); Springfield, Ohio; Louisville, Kentucky; Bridgeport, Illinois; Racine, Wisconsin; Bessels Bay, Arctic America.

Plesiotypes.—Cat. No. 51315, U.S.N.M.

Meristina maria roemeri Foerste.

Athyris tumida Roemer, Sil. Fauna West Tennessee, 1860, p. 70, pl. 5, fig. 12.

Meristina maria-roemeri Foerste, Bull. Sci. Lab. Denison Univ., 14, 1909, p. 88, pl. 2, fig. 29A, B.

Niagaran (Brownsport): Near Glenkirk, Brownsport Furnace, Pegram, Savannah, etc., Tennessee.

MERISTINA NITIDA Hall. See Whitfieldella nitida.

Meristina profunda Grabau.

Meristina profunda Grabau, Michigan Geol. Surv., Geol. Ser., 1, 1909, p. 160, pl. 21, figs. 20–22.

Lower Monroan (Raisin River): Raisin River, Michigan.

Meristina profunda sinosa Grabau.

Meristina profunda mut. sinosus Grabau, Michigan Geol. Surv., Geol. Ser., 1, 1909, p. 161, pl. 21, figs. 14–16.

Lower Monroan (Raisin River): Claim 432, Monroe County, Michigan.

Meristina rectirostris Hall.

Meristella rectirostra Hall, Desc. n. sp. Fossils from Waldron, Indiana, 1879, p. 15; 11th Rep. State Geol. Indiana, 1882, p. 301, pl. 27, figs. 10–14; Trans. Albany Inst., 10, 1883, p. 71.—Beecher and Clarke, Mem. New York State Mus., 1, 1889, p. 67, pl. 7, figs. 4, 5, 11–13.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 394, figs.

Meristina rectirostra Hall and Clarke, Pal. New York, 8, pt. 2, 1893, p. 68, figs. 52, 53, pl. 41, figs. 18–21.—Beecher, Amer. Jour. Sci., 3d ser., 44, 1892, p. 146.—Kindle and Breger, 28th Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1904, p. 445, pl. 9, figs. 21–24.

Niagaran: Waldron, Indiana (Waldron); Little Deer Creek, Carroll County, Indiana.

Meristina trisinuata (McChesney).

Pentamerus trisinuatus McChesney, Desc. New Pal. Fossils, 1861, p. 86.

Athyris? trisinuatus McChesney, Trans. Chicago Acad. Sci., 1, 1868, p. 33, pl. 8, fig. 2.

Meristina trisinuata Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 270.

Niagaran (Racine): Milwaukee, Wisconsin.

MERISTOSPIRA Grabau. Genotype: M. michiganensis Grabau.

Meristospira Grabau, Michigan Geol. Surv., Geol. Ser., 1, 1909, p. 158.—Schuchert, Zittel-Eastman Textb. Pal., 1913, p. 415.

Meristospira michiganensis Grabau.

Meristospira michiganense Grabau, Michigan Geol. Surv., Geol. Ser. 1, 1909, p. 159, pl. 20, figs. 5, 6, 7–11; pl. 21, figs. 4–6.

Upper Monroan (Amherstburg): Woolmith quarry, Monroe County, Michigan.

MEROCRINUS Walcott. Genotype: M. typus Walcott.

Merocrinus Walcott, 35th Rep. New York State Mus. Nat. Hist., 1884, p. 208, fig. (adv. sheets, 1883, p. 2).—Wachsmuth and Springer, Proc. Acad. Nat. Sci. Philadelphia, 1886, pp. 115, 139 (Rev. Pal., pt. 3, sec. 2, pp. 191, 215); ibid., 1890, p. 380.—Faber, Jour. Cincinnati Soc. Nat. Hist., 9, 1886, pp. 18, 19.—Miller, N. A. Geol. Pal., 1889, p. 262.—Bather, Geol. Mag., dec. 4, 6, 1899, p. 33, fig. 4; Ann. Mag. Nat. Hist., 6th ser., 5, 1890, p. 332, pl. 14, fig. 11; Geol. Mag., dec. 4, 3, 1896, p. 73; Treatise on Zool., pt. 3, Echinoderma, London, 1900, p. 178, fig. 96; Bull. Victoria Memorial Mus., 1, 1913, p. 1.—Springer, Zittel-Eastman Textb. Pal., 2d ed., 1913, p. 215.

Merocrinus corroboratus Walcott.

Merocrinus corroboratus Walcott, 35th Rep. New York State Mus. Nat. Hist., 1882, p. 210, pl. 17, fig. 6.

Trenton: Trenton Falls, New York.

Merocrinus curtus (Ulrich).

Dendrocrinus curtus Ulrich, Jour. Cincinnati Soc. Nat. Hist., 2, 1879, p. 18, pl. 7, fig. 14.

Merocrinus curtus Wachsmuth and Springer, Proc. Acad. Nat. Sci. Philadelphia, 1886, p. 140 (Rev. Pal., pt. 3, sec. 2, p. 216).—Faber, Jour. Cincinnati Soc. Nat. Hist., 9, 1886, p. 19, pl. 1, fig. 2.—Miller, N. A. Geol. Pal., 1889, p. 262, fig. 367.

Eden (Fulton): Cincinnati, Ohio, and vicinity.

Holotype.—Cat. No. 42103, U.S.N.M.

Merocrinus typus Walcott.
Merocrinus typus Walcott, 35th Rep. New York State Mus. Nat. Hist., 1884, p. 209, pl. 17, fig. 5 (adv. sheets, 1883).
Trenton: Trenton Falls, New York; West Covington, Kentucky.

MESOMPHALUS Ulrich and Bassler. Genotype: M. hartleyi Ulrich and Bassler.
Mesomphalus Ulrich and Bassler, Maryland Geol. Surv., Low. Dev., 1913, p. 522.

Mesomphalus hartleyi Ulrich and Bassler.
Mesomphalus hartleyi Ulrich and Bassler, Maryland Geol. Surv., Low. Dev., 1913, p. 523, pl. 95, figs. 22–24; pl. 96, figs. 1–3.
Helderbergian (Keyser): Cumberland, Maryland; Keyser, West Virginia.
Cotypes.—Cat. No. 53304, U.S.N.M.

Mesomphalus submarginata Ulrich and Bassler.
Mesomphalus submarginata Ulrich and Bassler, Maryland Geol. Surv., Low. Dev., 1913, p. 523, pl. 96, figs. 4, 5.
Helderbergian (Keyser): Cumberland, Maryland.
Holotype.—Cat. No. 53308, U.S.N.M.

MESOPALÆASTER Schuchert. Genotype: Palæaster shæfferi Hall.
Palæaster (part) of authors.
?Argaster Hall, 20th Rep. New York State Cab. Nat. Hist., 1868, p. 287; rev. ed., 1868–1870, p. 329 (nom. nud.).
Mesopalæaster Schuchert, in Frech, Foss. Cat., 1, Anim., pt. 3, 1914, p. 24; Bull. U. S. Nat. Mus., 88, 1915, p. 74.

Mesopalæaster antiquus (Troost).
Asterias antiqua Troost (not Hisinger, 1837), Trans. Geol. Soc. Pennsylvania, 1, 1835, p. 232, pl. 10, fig. 9; 5th Geol. Rep. Tennessee, 1840, pp. 11, 55; ibid., 6th Rep., 1841, p. 176; Proc. Amer. Assoc. Adv. Sci., 2, 1850, p. 59.
Petraster(?) antiqua Shumard, Trans. Acad. Sci. St. Louis, 2, 1866, p. 386 (gen. ref.).
Palæaster (Argaster) antiqua Hall, 20th Rep. New York State Cab. Nat. Hist., 1868, p. 287; rev. ed., 1870, p. 329.
Palæaster antiqua James, Jour. Cincinnati Soc. Nat. Hist., 18, 1895, p. 133.—Wood, Bull. U. S. Nat. Mus., 64, 1909, p. 105, pl. 8, fig. 1.
Argaster antiqua Gregory, Geol. Mag., dec. 4, 6, 1899, p. 345 (gen. ref.).
Mesopalæaster antiquus Schuchert, in Frech, Foss. Cat., 1, Anim., pt. 3, 1914, p. 24; Bull. U. S. Nat. Mus., 88, 1915, p. 86.
Trenton (Catheys): Harpeth River, Davidson County, Tennessee.

Mesopalæaster bellulus (Billings).
Petraster bellulus Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 393, fig. 368.—Miller, N. A. Geol. Pal., 1889, p. 269, fig. 389.
Mesopalæaster bellulus Schuchert, in Frech, Foss. Cat., 1, Anim., pt. 3, 1914, p. 24; Bull. U. S. Nat. Mus., 88, 1915, p. 91, fig. 7.
Clinton (Rochester): Grimsby, Ontario.

Mesopalæaster(?) cataractensis Schuchert.
Mesopalæaster(?) cataractensis Schuchert, in Frech, Foss. Cat., 1, Anim., pt. 3, 1914, p. 25 (nom. nud.); Bull. U. S. Nat. Mus., 88, 1915, p. 89, pl. 9, fig. 2.
Upper Medinan (Cataract): Hamilton, Ontario.

Mesopalæaster dubius (Miller and Dyer).
Palæaster dubius Miller and Dyer, Cont. to Pal., No. 2, 1878, p. 5, pl. 4, fig. 8.—James, Jour. Cincinnati Soc. Nat. Hist., 18, 1895, p. 130.

Mesopalæaster dubius—Continued.
Mesopalæaster(?) dubius Schuchert, in Frech, Foss. Cat., 1, Anim., pt. 3, 1914, p. 25; Bull. U. S. Nat. Mus., 88, 1915, p. 85.
Trenton (Upper): West Covington, Kentucky.

Mesopalæaster finei (Ulrich).
Palæaster finei Ulrich, Jour. Cincinnati Soc. Nat. Hist., 2, 1879, p. 19, pl. 7, figs. 15, 15a, b.—James, ibid., 18, 1895, p. 130.
Mesopalæaster finei Schuchert, in Frech, Foss. Cat., 1, Anim., pt. 3, 1914, p. 25; Bull. U. S. Nat. Mus., 88, 1915, p. 81, pl. 7, fig. 5; pl. 9, fig. 5.
Eden (Fulton): Cincinnati, Ohio, and vicinity.

Mesopalæaster granti (Spencer).
Palæaster granti Spencer, Bull. Missouri State Mus., 1, 1884, p. 53, pl. 7, fig. 1; Trans. Acad. Sci. St. Louis, 4, 1884, p. 603, pl. 7, fig. 1.
Mesopalæaster granti Schuchert, in Frech, Foss. Cat., 1, Anim., pt. 3, 1914, p. 25; Bull. U. S. Nat. Mus., 88, 1915, p. 89, pl. 9, fig. 3.
Upper Medinan (Cataract): Hamilton, Ontario.

Mesopalæaster intermedius Schuchert.
Mesopalæaster intermedius Schuchert, in Frech, Foss. Cat., 1, Anim., pt. 3, 1914, p. 25 (nom. nud.); Bull. U. S. Nat. Mus., 88, 1915, p. 79, pl. 9, fig. 4.
Maysville: Cincinnati, Ohio.

Mesopalæaster(?) lanceolatus Schuchert.
Mesopalæaster(?) lanceolatus Schuchert, in Frech, Foss. Cat., 1, Anim., pt. 3, 1914, p. 25 (nom. nud.); Bull. U. S. Nat. Mus., 88, 1915, p. 82, pl. 4, fig. 3.
Utica: Near Rome, New York.

Mesopalæaster parviusculus (Billings).
Palæaster parviusculus Billings, Canadian Nat. Geol., 5, 1860, p. 69, fig.—Dawson, Acadian Geol., 2d ed., p. 594, fig. 197.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 578, fig.—Hudson, Bull. New York State Mus., 164, 1913, p. 110, pls. 1–4.
Mesopalæaster(?) parviusculus Schuchert, in Frech, Foss. Cat., 1, Anim., pt. 3, 1914, p. 25; Bull. U. S. Nat. Mus., 88, 1915, p. 87, pl. 9, fig. 1.
Silurian: Arisaig, Nova Scotia.

Mesopalæaster proavitus Schuchert.
Mesopalæaster proavitus Schuchert, in Frech, Foss. Cat., 1, Anim., pt. 3, 1914, p. 25 (nom. nud.); Bull. U. S. Nat. Mus., 88, 1915, p. 83.
Eden (Economy): Covington, Kentucky.

Mesopalæaster shæfferi (Hall).
Palæaster shæfferi Hall, 20th Rep. New York State Cab. Hist., p. 284; rev. ed., 1870, p. 326, pl. 9, fig. 1.—Meek, Geol. Surv. Ohio, Pal., 1, 1873, p. 66, pl. E(4), fig. 1.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 578, fig.—James, Jour. Cincinnati Soc. Nat. Hist., 18, 1895, p. 131.
Mesopalæaster shæfferi Schuchert, in Frech, Foss. Cat., 1, Anim., pt. 3, 1914, p. 25; Bull. U. S. Nat. Mus., 88, 1915, p. 77, pl. 8, figs. 1, 2.
Maysville (Fairmount): Cincinnati, Ohio.
Richmond (Waynesville): Waynesville, Ohio.

Mesopalæaster wilberanus (Meek and Worthen).
Petraster wilberanus Meek and Worthen, Proc. Acad. Nat. Sci. Philadelphia, 13, 1861, p. 142.—James, Jour. Cincinnati Soc. Nat. Hist., 18, 1895, p. 134.
Palæaster wilberanus Hall, 20th Rep. New York State Cab. Nat. Hist., 1868, p. 285; rev. ed., 1870, p. 328.

Mesopalæaster wilberanus—Continued.
Mesopalæaster(?) wilberanus Schuchert, in Frech, Foss. Cat., 1, Anim., pt. 3, 1914, p. 25; Bull. U. S. Nat. Mus., 88, 1915, p. 84.
Richmond: Oswego, Kendall County, Illinois.

MESOTRYPA Ulrich. Genotype: Diplotrypa infida Ulrich.
Diplotrypa (in part) Nicholson, Paleozoic Tabulate Corals, 1879, p. 312; Genus Monticulipora, 1881, pp. 101, 155.—Ulrich, Jour. Cincinnati Soc. Nat. Hist., 5, 1882, p. 153.—Foord, Contr. Micro-Pal. Cambro-Sil., 1883, p. 13.—Ulrich, Geol. Surv. Illinois, 8, 1890, p. 378.
Mesotrypa Ulrich, Geol. Minnesota, 3, 1893, p. 257.—Nickles and Bassler, Bull. U. S. Geol. Surv., 173, p. 30.—Bassler, Bull. U. S. Geol. Surv., 292, 1906, p. 27.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 130.—Hennig, Archiv. fur Zool., 4, No. 21, 1908, p. 29.—Bassler, Bull. U. S. Nat. Mus., 77, 1911, p. 196.

Mesotrypa angularis Ulrich and Bassler.
Mesotrypa angularis Ulrich and Bassler, Smiths. Misc. Coll., Quart., 47, 1904, p. 23, pl. 7, figs. 7-9.
Trenton: Frankfort, Burgin and Curdsville, Kentucky (Hermitage); Ottawa, etc., Ontario.
Holotype.—Cat. No. 43182, U.S.N.M.

Mesotrypa discoidea Ulrich.
Mesotrypa discoidea Ulrich, Geol. Minnesota, 3, 1893, p. 260, fig. 16.
Dianulites discoidea Miller, N. A. Geol. Pal., 2d App., 1897, p. 728 (gen. ref.).
Trenton (Prosser): Goodhue County, Minnesota.
Holotype.—Cat. No. 43544, U.S.N.M.

Mesotrypa echinata Ulrich and Bassler.
Mesotrypa echinata Ulrich and Bassler, Smiths. Misc. Coll., Quart., 47, 1904, p. 22, pl. 7, figs. 4-6.
Trenton (Hermitage): Nashville, Tennessee; Danville and Frankfort, Kentucky.
Holotype.—Cat. No. 44056, U.S.N.M.

Mesotrypa infida (Ulrich.
Diplotrypa infida Ulrich, 14th Ann. Rep. Geol. Nat. Hist. Surv. Minnesota, 1886, p. 88.
Mesotrypa infida Ulrich, Geol. Minnesota, 3, 1893, p. 258, pl. 17, figs. 1-8; Zittel's Textb. Pal. (Engl. ed.), 1896, fig. 453 (p. 273).—Bassler, Zittel-Eastman Textb. Pal., 1913, p. 333, fig. 479.
Black River (Decorah): Minneapolis, St. Paul, and Goodhue and Fillmore counties, Minnesota.
Cotypes.—Cat. Nos. 43542, 43543, U.S.N.M.

MESOTRYPA MILLERI Nickles and Bassler. See Mesotrypa nummiformis.

Mesotrypa nummiformis (Hall).
Callopora nummiformis Hall, Pal. New York, 2, 1852, p. 148, pl. 40, figs. 5a, b.
Calloporella? nummiformis Ulrich, Geol. Surv. Illinois, 8, 1890, p. 416.
Mesotrypa nummiformis Bassler, Bull. U. S. Geol. Surv., 292, 1906, p. 27, pl. 10, figs. 1-4.
Diplotrypa milleri Ulrich, Jour. Cincinnati Soc. Nat. Hist., 5, 1882, p. 245, pl. 11, figs. 2-2c.
Mesotrypa milleri Nickles and Bassler, Bull. U. S. Geol. Surv. 173, 1900, p. 312.
Clinton: Lockport, Rochester, etc., New York; Grimsby, Hamilton, etc., Ontario (Rochester); Osgood, Indiana (Osgood).
Plesiotypes.—Cat. Nos. 35544, 43659, U.S.N.M. (*holotype* of D. milleri).

Mesotrypa orbiculata Cumings and Galloway.

Mesotrypa orbiculata Cumings and Galloway, 37th Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1913, p. 80, pl. 14, figs. 1-1b.

Richmond (Arnheim): Big Four Railroad, near Harmon's Station, Indiana.

Mesotrypa patella (Ulrich).

Diplotrypa patella Ulrich, Geol. Surv. Illinois, 8, 1890, p. 458, pl. 33, figs. 2-2c.—J. F. James, Jour. Cincinnati Soc. Nat. Hist., 16, 1894, p. 184.

Mesotrypa patella Ulrich, Geol. Minnesota, 3, 1893, p. 257.

Dianulites patella Miller, N. A. Geol. Pal., 2d App., 1897, p. 728 (gen. ref.).

Richmond (Whitewater): Oxford, Ohio; Richmond, Indiana.

Holotype.—Cat. No. 43306, U.S.N.M.

Mesotrypa quebecensis (Ami).

Diplotrypa Quebecensis Ami, Canadian Rec. Sci., 5, 1892, p. 101.

Mesotrypa quebecensis Ulrich, Geol. Minnesota, 3, 1893, p. 259, figs. 15, e, f.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 130, fig. 186f.—Bassler, Bull. Virginia Geol. Surv., 2a, 1909, pl. 24, figs. 3, 4.

Dianulites quebecensis Miller, N. A. Geol. Pal., 2d App., 1897, p. 728 (gen. ref.).

Trenton: Quebec, etc., Quebec; Bridport, Vermont; Trenton Falls and Little Falls, New York; Frankfort, Burgin, and Danville, Kentucky (Hermitage); Decorah, Iowa (Prosser).

Plesiotype.—Cat. No. 43540, U.S.N.M.

Mesotrypa regularis (Foord).

Diplotrypa regularis Foord, Contr. Micro-Pal. Cambro-Sil., 1883, p. 13, pl. 1, figs. 3-3c.

Mesotrypa regularis Ulrich, Geol. Minnesota, 3, 1893, p. 257.

Trenton: Ottawa, Ontario.

Mesotrypa? rotunda Ulrich.

Mesotrypa? rotunda Ulrich, Geol. Minnesota, 3, 1893, p. 262, fig. 17.

Dianulites rotunda Miller, N. A. Geol. Pal., 2d App., 1897, p. 728 (gen. ref.).

Trenton (Prosser): Hader, Minnesota.

Holotype.—Cat. No. 43545, U.S.N.M.

Mesotrypa selkirkensis Whiteaves.

Mesotrypa selkirkensis Whiteaves, Pal. Foss., 3, 1897, p. 162, pl. 19, figs. 1, 1a.

Dianulites selkirkensis Miller, N. A. Geol. Pal., 2d App., 1897, p. 728 (gen. ref.).

Black River or Richmond: East Selkirk, Manitoba.

Mesotrypa? spinosa Ulrich.

Mesotrypa? spinosa Ulrich, Geol. Minnesota, 3, 1893, p. 259, pl. 17, figs. 9-12.

Black River (Decorah): Minneapolis and St. Paul, Minnesota.

Cotypes.—Cat. No. 43546, U.S.N.M.

Mesotrypa whiteavesi (Nicholson).

Chætetes petropolitanus (part) Nicholson, Quar. Jour. Geol. Soc. London, 30, 1875, p. 510, pl. 30, figs. 5, 5c; Pal. Ohio, 2, 1875, p. 204, pl. 21, figs. 14-14b; Geol. Mag., n. s., 2, 1875, p. 175; Ann. Mag. Nat. Hist., 4th ser., 18, 1876, p. 88, pl. 5, figs. 6a (not 6).

Monticulipora (Diplotrypa) whiteavesii Nicholson, Paleozoic Tabulate Corals, 1876, p. 316, pl. 13, figs. 4-4b (not pl. 14, 1); Genus Monticulipora, 1881, p. 160, fig. 31.

Monticulipora whiteavesii James and James, Jour. Cincinnati Soc. Nat. Hist., 10, 1888, p. 169; J. F. James, ibid., 16, 1894, p. 187.

Mesotrypa whiteavesi—Continued.
Mesotrypa whiteavesii Ulrich, Geol. Minnesota, 3, 1893, figs. 15g, h.
Trenton: Peterboro, etc., Ontario.
Plesiotype.—Cat. No. 43541, U.S.N.M.

METABLASTUS SUBCYLINDRICA Etheridge and Carpenter. See Troostocrinus subcylindrica.

METOPIAS Eichwald. See Metopolichas Gurich.

METOPOLICHAS Gurich. Genotype: M. hubneri Eichwald.
Metopias Eichwald, Die Urwelt Russ., 1842, p. 62.—Loven, Ofvers. K. Vet.-Akad. Forhandl., 2, 1845, p. 53.—Schmidt, Mem. l'Acad. Imp. Sci. St. Petersburg, 7th ser., 33, 1885, pp. 30, 39.—Koken, Die Leitfossilien, Leipzig, 1896, p. 30.
Metopolichas Gurich, Neues Jahrb. Min., Geol. Pal., 14, Beilage-Band, 1901, p. 521, pl. 20, fig. 17.—Reed, Quart. Jour. Geol. Soc. London, 58, 1902, p. 61.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 311.

Metopolichas breviceps (Hall).
Lichas breviceps Hall, Trans. Albany Inst., 4, 1863, p. 222.—Hall and Whitfield, Pal. Ohio, 2, 1875, p. 156, pl. 6, fig. 17.—Hall, 28th Rep. New York State Mus. Nat. Hist., doc. ed., 1877, pl. 34, figs. 1–7; mus. ed., 1879, p. 197, pl. 34, figs. 1–7; 11th Rep. Dep. Geol. and Nat. Hist., Indiana, 1882, p. 343, pl. 36, figs. 1–7.—Chamberlin, Geol. Wisconsin, 1, 1883, p. 195, fig.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 337, figs.
Metopolichas breviceps Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 311.
Niagaran (Waldron): Waldron, Indiana; Newsom, Tennessee.

Metopolichas breviceps clintonensis (Foerste).
Lichas breviceps Foerste, Bull. Sci. Lab. Denison Univ., 1, 1885, p. 112, pl. 13, fig. 26a–d; ibid., 2, 1887, p. 98, pl. 8, figs. 18, 19.
Lichas breviceps clintonensis Foerste, Geol. Surv. Ohio, 7, 1895, p. 529, pl. 25, figs. 26a–e; pl. 27, figs. 18, 19; Jour. Geol., 11, 1903, p. 706 (loc. occ.).
Metopolichas breviceps clintonensis Savage, Bull. Geol. Surv. Illinois, 23, 1913, p. 105, pl. 6, figs. 13, 14.
Upper Medinan: Dayton, etc., Ohio; Hanover, Indiana (Brassfield); near Thebes, Illinois; Edgewood and Louisiana, Missouri (Edgewood).

Metopolichas ferrisi Weller.
Metopolichas ferrisi Weller, Bull. Chicago Acad. Sci., Nat. Hist. Surv., 4, pt. 2, 1907, p. 244, pl. 22, figs. 12–13.—Savage, Bull. Geol. Surv. Illinois, 23, 1913, p. 122, pl. 7, figs. 23, 24.
Upper Medinan (Channahon): Near Channahon, Will County, Illinois.

Metopolichas pugnax (Winchell and Marcy).
Lichas pugnax Winchell and Marcy, Mem. Boston Soc. Nat. Hist., 1, 1865, p. 103, pl. 3, figs. 10a–c.—Hall, 20th Rep. New York State Cab. Nat. Hist., rev. ed., 1870, p. 424, pl. 25, fig. 20; also p. 433.
Metopolichas pugnax Weller, Bull. Chicago Acad. Sci., Nat. Hist. Surv., 4, pt. 2, 1907, p. 242, pl. 21, figs. 1–4.
Niagaran (Racine): Bridgeport, Illinois.

METOPTOMA Phillips. Genotype: M. oblonga Phillips.
Metoptoma Phillips, Geol. Yorkshire, pt. 2, 1836, p. 223.—D'Orbigny, Prodr. de Pal., 1, 1849, p. 73.—Woodward, Man. Mollusca, pt. 1, 1851, p. 155.—McCoy, British Pal. Rocks and Foss., 1854, p. 523.—Billings, Pal. Foss., 1,

METOPTOMA—Continued.

Geol. Surv. Canada, 1862, p. 86.—Meek and Worthen, Proc. Acad. Nat. Sci. Philadelphia, 1866, p. 266; Geol. Surv. Illinois, 3, 1868, p. 506.—Zittel, Handb. Pal., 2, 1882, p. 176.—Koninck, Ann. d. Mus. Royal d'Hist. Nat. de Belgique, 8, 1883, p. 187.—Koken, Neues Jahrb. Min. Geol. Pal., 6, Beilage-Band, 1889, p. 422.—Miller, N. A. Geol. Pal., 1889, p. 409.—Koken, Die Leitfossilien, Leipzig, 1896, p. 94, fig. 72, figs. 1, 2.—Berkey, Amer. Geol., 21, 1898, p. 278.—Pilsbry, Zittel-Eastman Textb. Pal., 1, 1900, p. 442.

Observation.—Although numerous species have been referred to Metoptoma by American authors, it is probable that none of them possesses the essential features of the genus. Metoptoma is apparently the European representative of the American Carboniferous genus Lepetopsis Whitfield.

Metoptoma Billings, and other authors. See Archinacella Ulrich and Scofield, and Triblidium Lindström.

Metoptoma?? alceste Billings.
Metoptoma Alceste Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 153, text figs. 133a, b (adv. sheets, 1862); Cat. Sil. Foss. Anticosti Geol. Surv. Canada, 1866, p. 18.
Richmond (English Head): English Head, Anticosti.

Metoptoma alta Whitfield. See Scenella? alta.

Metoptoma? analoga Walcott. See Scenella analoga.

Metoptoma?? augusta Billings.
Metoptoma Augusta Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 88. (Adv. sheets, 1862.)
Ozarkian? (Levis-erratics): Point Levis, Quebec.

Metoptoma?? anomala Billings.
Metoptoma anomala Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 89, figs. 81a, b. (Adv. sheets, 1862.)
Ozarkian? (Levis-erratics): Point Levis, Quebec.

Metoptoma Barabuensis Whitfield. See Tryblidium barabuense.

Metoptoma billingsi Walcott. See Archinacella? billingsi.

Metoptoma canadensis Miller. See Priscochiton canadensis.

Metoptoma cornutaforme Walcott. See Tryblidium cornutaforme.

Metoptoma deformis Billings. See Archinacella deformata.

Metoptoma dubia Hall. See Archinacella deformata.

Metoptoma Erato Billings. See Tryblidium erato.

Metoptoma Estella Billings. See Archinacella estella.

Metoptoma Eubule Billings. See Tryblidium eubule.

Metoptoma explanata Sardeson. See Archinacella perovalis.

Metoptoma Hyrie Billings. See Tryblidium hyrie.

Metoptoma instabilis Billings. See Archinacella instabilis.

Metoptoma?? melissa Billings.
Metoptoma Melissa Billings, Pal. Fossils, 1, Geol. Surv. Canada, 1865, p. 86 (adv. sheets, 1862).
Ozarkian? (Levis—erratics): Point Levis, Quebec.

METOPTOMA MONTREALENSIS Billings. See Scenella montrealensis.

METOPTOMA MONTREALENSIS Raymond. See Archinacella propria.

METOPTOMA NIOBE Billings. See Tryblidium niobe.

METOPTOMA NYCTEIS Billings. See Tryblidium nycteis.

METOPTOMA ORITHYIA Billings. See Scenella orithyia.

METOPTOMA ORPHYNE Billings. See Palæacmæa orphyne.

METOPTOMA PEROVALIS Whitfield. See Archinacella perovalis.

METOPTOMA PHILLIPSI Walcott. See Archinacella phillipsi.

METOPTOMA QUEBECENSIS Billings. See Palæacmæa quebecensis.

METOPTOMA RECURVA Whitfield. See Hypseloconus recurvus.

METOPTOMA RETRORSA Whitfield. See Tryblidium retrorsum.

METOPTOMA SIMILIS Whitfield. See Archinacella similis.

METOPTOMA SIMPLEX Billings. See Archinacella simplex.

METOPTOMA SUPERBA Billings. See Scenella superba.

METOPTOMA TRENTONENSIS Billings. See Archinacella trentonensis.

METOPTOMA VENILLIA Billings. See Scenella? venillia.

MICHELINIA Dekoninck. Genotype: Manon favosum Goldfuss.
Michelinia Dekoninck, Desc. Animaux Fossiles, Liege, 1842, p. 29.—Dana, Wilkes U. S. Expl. Exped., 1838–42, 7, Zoophytes, 1846, p. 362.—Edwards and Haime, Compt. Rend. Acad. Sci., 29, 1849, p. 260; Mon. Polyp. Foss. Terr. Pal. (Arch. du Mus. d'Hist. Nat., 5), 1851, pp. 152, 249.—McCoy, British Pal. Rocks Foss., 1854, p. 80.—King, Ann. Mag. Nat. Hist., 2d ser., 17, 1856, p. 137.—Pictet, Traite de Pal., 2d ed., 4, 1857, p. 441.—Billings, Geol. Surv. Canada, Rep. Progr. for 1857, 1858, p. 173; Canadian Nat. Geol., 3, 1858, p. 426; Canadian Jour., n. s., 4, 1859, p. 111.—Milne Edwards, Hist. Nat. Corall., 3, 1860, p. 259.—Rominger, Amer. Jour. Sci. Arts, 2d ser., 34, 1862, pp. 391, 399.—Koninck, Animaux Foss. Terr. Carb. Belgique (Mem. l'Acad. Royal Sci. de Belgique, 39), 1872, p. 130.—Nicholson, Rep. Pal. Prov. Ontario, pt. 1, 1874, p. 63.—Lindstrom, Ann. Mag. Nat. Hist., 4th ser., 18, 1876, p. 12.—Rominger, Geol. Surv. Michigan, 3, pt. 2, 1876, p. 72.—Nicholson, Tab. Corals Pal. Period, 1879, p. 139, 151.—Zittel, Handb. Pal., 1, 1879, p. 235.—Roemer, Leth. geog., pt. 1, Leth. Pal., 1883, p. 429.—Waagen and Wenzel, Mem. Geol. Surv. India, Pal. Indica, 13th ser., 1, 1886, p. 848.—Hall and Simpson, Pal. New York, 6, 1887, p. 12.—Miller, N. A. Geol. Pal., 1889, p. 196.—Sardeson, Neues Jahrb. f. Min., Geol. Pal., Beilage-Band, 10, 1896, p. 294.—Lambe, Cont. Can. Pal., Geol. Surv. Canada, 4, pt. 1, 1899, p. 37.—Zittel-Eastman Textb. Pal., 1, 1900, p. 101; ibid., 2d ed., 1913, p. 115.

Michelinia louisvillensis Greene.

Michelinia louisvillensis Greene, Cont. Indiana Pal., pt. 3, 1899, p. 20, pl. 8, figs. 10-12.

Niagaran (Louisville): Near Louisville, Kentucky.

Michelinia niagarensis Davis.

Michelinia niagarensis Davis, Kentucky Foss. Corals, Geol. Surv. Kentucky, pt. 2, 1885, pl. 39, fig. 2.

Niagaran (Louisville): Near Louisville, Kentucky.

Michelinia prima Davis.

Michelinia prima Davis, Kentucky Foss. Corals, Geol. Surv. Kentucky, pt. 2, 1885, pl. 39, figs. 3-5; pl. 40, fig. 1.

Niagaran (Louisville): Louisville, Kentucky.

MICROCERAS Hall. Genotype: M. inornatum Hall.

Microceras Hall, Amer. Jour. Sci., 48, 1845, p. 249.—Meek, Geol. Surv. Ohio, Pal. 1, 1873, p. 148.—Miller, Cincinnati Quart. Jour. Sci., 1, 1874, p. 311.—Koninck, Ann. Mus. Royal d'Hist. Nat. de Belgique, 8, 1883, p. 123, footnote.—Miller, N. A. Geol. Pal., 1889, p. 410.—Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 847.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res., Indiana, 1908, p. 951.

Discolites Emmons, Amer. Geology, 1, pt. 2, 1855, p. 234 (Genotype: D. minutus Emmons).

Microceras inornatum Hall.

Microceras inornatus Hall, Amer. Jour. Sci. Arts, 48, 1845, p. 294.—Miller, Cincinnati Quart. Jour. Sci., 1, 1874, p. 312.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 970, pl. 40, figs. 9, 9a.

Cyrtolites (Microceras) inornatus Meek, Geol. Surv. Ohio, Pal. 1, 1873, p. 147, pl. 13, figs. 4a, b.

Cyrtolites subcompressus Meek, Geol. Surv. Ohio, Pal. 1, 1873, p. 147 (under C. inornatus).

Discolites minutus Emmons, Amer. Geology, 1, pt. 2, 1855, p. 234.

Maysville and Richmond: Cincinnati, Ohio, and vicinity; Indiana; Kentucky; Tennessee; etc.

Microceras minutissimum Ulrich.

Microceras minutissimum Ulrich, Jour. Cin. Soc. Nat. Hist., 2, 1879, p. 13, pl. 7, fig. 8.

Maysville (Fairmount): Hamilton, and Cincinnati, Ohio.

Cotypes.—Cat. No. 46048, U.S.N.M.

Microdiscus Emmons. See Ampyx Dalman.

Micropora Eichwald. See Stictoporella Ulrich.

Microspongia Miller and Dyer. See Hindia Duncan.

Millepora repens Fought. See Alveolites repens.

Milleria Davis. See Dictyostroma Nicholson.

MIMULUS Barrande. Genotype: M. perversus Barrande.

Mimulus Barrande, Syst. Sil. du Centre Boheme, 5, pt. 1, 1879, p. 109, pl. 9 (Ext. ibid., p. 173).—Zittel, Handb. Pal., 1, p. 684.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 272; 11th Ann. Rep. New York State Geol., 1894, p. 289.—Schuchert, Zittel-Eastman Textb. Pal., 1, 1900, p. 315; ibid., 2d ed., 1913, p. 388.

Mimulus waldronensis (Miller and Dyer).

Spirifera(?) waldronensis Miller and Dyer, Jour. Cincinnati Soc. Nat. Hist., 1, 1878, p. 37, pl. 2, fig. 3.

Triplesia putillus Hall, Desc. New Sp. Foss., Waldron, Ind., 1879, p. 16; 11th Rep. State Geol. Indiana, 1882, p. 298, pl. 27, figs. 19–22; Trans. Albany Inst., 10, 1883, p. 72.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1226, figs.

Streptis waldronensis Beecher and Clarke, Mem. New York State Mus., 1, 1889, p. 301, pl. 3, figs. 9, 10.

Mimulus waldronensis Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 273, pl. 11C, figs. 23–28.

Niagaran (Waldron): Waldron, Indiana; Newsom, Tennessee.

MITOCLEMA Ulrich. Genotype: M. cinctosum Ulrich.

Mitoclema Ulrich, Jour. Cincinnati Soc. Nat. Hist., 5, 1882, p. 150, Geol. Surv. Illinois, 8, 1890, pp. 336, 369; Geol. Minnesota, 3, 1893, p. 122.—Pocta, Syst. Sil. Centre Boheme, 8, pt. 1, 1894, p. 13.—Simpson, 14th Ann. Rep. State Geol. New York for 1894, 1897, p. 598.—Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 22.—Bassler, Bull. U. S. Geol. Surv., 292, 1906, p. 18.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 120.—Bassler, Bull. U. S. Nat. Mus., 77, 1911, p. 69.

Mitoclema cinctosum Ulrich.

Mitoclema cinctosum Ulrich, Jour. Cincinnati Soc. Nat. Hist., 5, 1882, p. 159, pl. 6, figs. 7, 7a; Ulrich, Geol. Surv. Illinois, 8, 1890, pl. 53, figs. 8–8b.—Simpson, 14th Ann. Rep. State Geol. New York for 1894, 1897, figs. 205, 206 (p. 599).

Enallopora cinctosa, Miller, N. A. Geol. Pal., 1889, p. 301 (gen. ref.).

Stones River (Ridley): Bottom of gorge, High Bridge, Kentucky: Murfreesboro, Tennessee.

Cotypes.—Cat. No. 43270, U.S.N.M.

Mitoclema? mundulum Ulrich.

Mitoclema? mundulum Ulrich, Jour. Cincinnati Soc. Nat. Hist., 12, 1890, p. 177. figs. 4a–c; Geol. Minnesota, 3, 1893, p. 123, pl. 2, figs. 4–6.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 121, figs. 178g, h.—Bassler, Bull. U. S. Nat. Mus. 77, 1911, pp. 70, 71, fig. 16.

Trenton (Prosser): Cannon Falls, Minnesota.

Middle Ordovician (Kuckers): Near Jewe, Esthonia, Russia.

Cotypes and *plesiotypes.*—Cat. Nos. 43297, 57187, U.S.N.M.

Mitoclema sarlei Bassler.

Mitoclema sarlei Bassler, Bull. U. S. Geol. Surv., 292, 1906, p. 18, pl. 5, figs. 10–12.

Clinton (Rochester): Rochester, New York.

Cotypes.—Cat. No. 35460, U.S.N.M.

MITROCERAS Hyatt. Genotype: Trochoceras gebhardi Hall.

Mitroceras Hyatt, Proc. American Phil. Soc., 32, 1894, p. 503.—Miller, N. A. Geol. Pal., 2d App., 1897, p. 775.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 74.

Trochoceras Hall (not Barrande, 1847) Nat. Hist. New York Pal., 2, 1852, p. 335; 15th Rep. New York State Cab. Nat. Hist., 1862, p. 64.—Miller, N. A. Geol. Pal., 1889, p. 455.—Grabau Bull. New York State Mus. 9, 1901, p. 217; Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 217.

Mitroceras gebhardi (Hall).

Trochoceras gebhardii Hall, Pal. New York, 2, 1852, p. 335, pl. 77, fig. 2; pl. 77a, figs. 1a-d.—Grabau, Bull. Geol. Soc. Amer., 11, 1900, p. 371, pl. 21, figs. 3a-b; Bull. New York State Mus., 45, 1901, p. 217, fig. 149; ibid., 92, 1906, p. 110, figs. 16, 17; Michigan Geol. Surv., Geol. Ser., 1, 1909, p. 199, pl. 31, figs. 3a-b.

Mitroceras gebhardi Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 75, figs. 1289, 1290.

Cayugan: Schoharie (Cobleskill), Buffalo and Williamsville, New York (Akron).

MITROCRINUS Miller and Gurley. Genotype: M. wetherbyi Miller and Gurley.

Mitrocrinus Miller and Gurley, Bull. Illinois State Mus. Nat. Hist., 5, 1894, p. 22.—Miller, N. A. Geol. Pal., 2d App., 1897, p. 748.—Bather, Treatise on Zool., pt. 3, Echinoderma, London, 1900, p. 203.

Mitrocrinus wetherbyi Miller and Gurley.

Mitrocrinus wetherbyi Miller and Gurley, Bull. Illinois State Mus. Nat. Hist., 5, 1894, p. 22, pl. 2, figs. 4-6.—Miller, N. A. Geol. Pal., 2d App., 1897, p. 748, fig. 1364.

Chazyan (Ottosee): Knox County, Tennessee.

MODIOLA OBTUSA Hall. See Modiolopsis obtusa.

MODIOLODON Ulrich. Genotype: Modiolopsis oviformis Ulrich.

Cyrtodonta (part) Safford, Geol. Tennessee, 1869, p. 287.

Modiolopsis (part) Ulrich, Amer. Geol., 5, 1900, p. 276.

Modiolodon Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 521; Geol. Surv. Ohio, 7, 1893, p. 652.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 981.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 516.

Modiolodon arcticus Schuchert.

Modiolodon arcticus Schuchert, Proc. U. S. Nat. Mus., 22, 1900, p. 161, pl. 13, figs. 18, 19.

Trenton: Head of Frobisher Bay, Baffin Land.

Holotype.—Cat. No. 28166, U.S.N.M.

Modiolodon declivis Ulrich.

Modiolodon declivis Ulrich, Geol. Surv. Ohio, 7, 1893, p. 654, pl. 53, figs. 3 and 4.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 1005, pl. 46, figs. 2, 2a.

Richmond (Whitewater): Richmond, Indiana.

Holotype.—Cat. No. 46227, U.S.N.M.

Modiolodon ganti (Safford).

Cyrtodonta Gantii Safford, Geol. Tennessee, 1869, p. 287, pl. 1 (E), figs. 1a-h.

Modiolodon Gantii Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 521, fig. 40d.

Cypricardites ganti Miller, N. A. Geol. Pal., 1889, p. 476 (gen. ref.).

Trenton (Hermitage): Wilson County, Tennessee.

Cotypes.—Cat. No. 46228, U.S.N.M.

Modiolodon(?) gibbus Ulrich.

Modiolodon(?) gibbus Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 522, pl. 35, figs. 28, 29.

Modiolopsis gibba Miller, N. A. Geol. Pal., 2d App., 1897, p. 782 (gen. ref.).

Black River: Near Cannon Falls, Minnesota (Decorah); Lincoln County, Missouri (Auburn).

Holotype.—Cat. No. 46229, U.S.N.M.

Modiolodon obtusus Ulrich.

Modiolopsis modiolaris Hall and Whitfield (not Hall), Pal. Ohio, 2, 1875, pl. 2, fig. 17.

Modiolodon obtusus Ulrich, Geol. Surv. Ohio, 7, 1893, p. 654, pl. 52, figs. 20 and 21.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 1005, pl. 46, figs. 4, 4a.

Maysville (Bellevue): Cincinnati, Ohio, and vicinity.

Cotypes.—Cat. No. 46230, U.S.N.M.

Modiolodon oviformis (Ulrich).

Modiolopis oviformis Ulrich, Amer. Geol., 5, 1890, p. 276, fig. 4a–c.

Modiolodon oviformis Ulrich, Geol. Surv. Ohio, 7, 1893, p. 652, pl. 53, figs. 7 and 8.—Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 521, fig. 40g.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 516, figs. 693, 694a.

Trenton (Hermitage): Boyle, Mercer, Anderson, and Franklin Counties, Kentucky; Wilson County, Tennessee.

Holotype and *plesiotype.*—Cat. Nos. 46231, 46232, U.S.N.M.

Modiolodon oviformis amplus Ulrich.

Modiolodon oviformis var. amplus Ulrich, Geol. Surv. Ohio, 7, 1893, p. 653, pl. 53, figs. 1 and 2.

Trenton (Hermitage): Frankfort, Kentucky.

Cotypes.—Cat. No. 46233, U.S.N.M.

Modiolodon patulus Ulrich.

Modiolodon patulus Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 521, pl. 37, figs. 20–24.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 516, fig. 694b, c.

Modiolopsis patulus Miller, N. A. Geol. Pal., 2d App., 1897, p. 782 (gen. ref.).

Trenton: Kenyon, Goodhue County, Minnesota; Decorah, Iowa (Prosser); Danville, Kentucky.

Cotypes.—Cat. Nos. 46234, 46727, U.S.N.M.

Modiolodon poststriatus Foerste.

Modiolodon poststriatus Foerste, Bull. Sci. Lab. Denison Univ., 17, 1914, p. 294, pl. 1, fig. 7.

Cincinnatian (Pulaski): Near Vars, Quebec.

Modiolodon subovalis Ulrich.

Modiolodon subovalis Ulrich, Geol. Surv. Ohio, 7, 1893, p. 655, pl. 51, figs. 11–13.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 1006, pl. 46, figs. 3–3b.

Richmond (Arnheim-Waynesville): Versailles, Indiana.

Cotypes.—Cat. No. 46236, U.S.N.M.

Modiolodon subrectus Ulrich.

Modiolodon subrectus Ulrich, Geol. Surv. Ohio, 7, 1893, p. 653, pl. 53, figs. 5, 6.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 1007, pl. 46, figs. 5–5a.

Modiolopsis subrectus Miller, N. A. Geol. Pal., 2d App., 1897, p. 782 (gen. ref.).

Richmond (Whitewater): Richmond, Indiana.

Holotype.—Cat. No. 46237, U.S.N.M.

Modiolodon subrhomboideus Branson.

Modiolodon subrhomboideus Branson, Trans. Acad. Sci. St. Louis, 18, 1909, p. 41, pl. 7, fig. 1.

Black River (Auburn-Decorah): Lincoln County, Missouri.

Modiolodon truncatus (Hall).

Modiolopsis truncatus Hall, Pal. New York, 1, 1847, p. 296, pl. 81, figs. 3a, b.—Miller, Cincinnati Quart. Jour. Sci., 1, 1874, p. 217.—Hall and Whitfield, Geol. Surv. Ohio, Pal. 2, 1875, p. 86, pl. 2, fig. 13.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 412, fig.

Eurymya? truncata (changed to Modiolodon truncata on p. 628) Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 512 (gen. ref.).

Modiolodon truncatus Ulrich, Geol. Surv. Ohio, 7, 1893, p. 656, pl. 51, figs. 9-10.—Cumings, 32d Ann. Rep. Dept. Geol. Nat. Res. Indiana, 1908, p. 1008, pl. 46, figs 6, 6a.

Lyonsia subtruncata D'Orbigny, Prodr. Pal., 1, p. 11 (proposed for Modiolopsis truncatus Hall, 1847; not M. truncata Agassiz, 1842).—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 171, pl. 17, fig. 4.

Cincinnatian: Near Rome, New York (Pulaski); Cincinnati, Ohio, and vicinity (Fairmount-Corryville).

Plesiotypes.—Cat. Nos. 46238, 46239, U.S.N.M.

Modiolodon winchelli (Safford).

Cyrtodonta winchelli Safford, Geol. Tennessee, 1869, p. 287, pl. L (E), figs. 2a-i.

Modiolodon winchelli Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 521, fig. 40e-f.

Cypricardites winchelli Miller, N. A. Geol. Pal. 1889, p. 477 (gen. ref.).

Trenton (Hermitage): Wilson County, Tennessee.

Plesiotypes.—Cat. No. 46240, U.S.N.M.

MODIOLOPSIS (part) of authors. See Eurymya, Allodesma, Modiolodon, and Whiteavesia Ulrich.

MODIOLOPSIS Hall. Genotype: Cypricardites modiolaris Conrad.

Modiolopsis Hall, Pal. New York, 1, 1847, p. 157.—McCoy, British Pal. Rocks Foss., 1854, p. 265.—Woodward, Man. Mollusca, pt. 2, 1854, p. 266.—Pictet, Traité de Pal., 2d ed., 3, 1855, p. 533.—Hall, Pal. New York, 3, 1859, p. 14, 269 and 270, footnote; 12th Rep. New York State Cab. Nat. Hist., 1859, p. 9.—Hitchcock, Geol. Vermont, 1, 1862, p. 296.—Salter, Cat. Camb. Sil. Foss., 1873, p. 65.—Miller, Cincinnati Quart. Jour. Sci., 1, 1874, p. 216.—Zittel, Handb. Pal., 2, 1881, p. 44.—Barrande, Syst. Sil. du Centre Boheme, 6, 1881, p. 107.—Miller, N. A. Geol. Pal., 1889, p. 489.—Barrois, Ann. Soc. Geol. du Nord., 19, Lille, 1891, p. 206.—Whidborne, Mon. Dev. Fauna South England, 1, Pal. Soc., 1892, p. 40.—Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 502.—Koken, Die Leitfossilien, Leipzig, 1896, p. 191.—Dall, Zittel-Eastman Textb. Pal., 1, 1900, p. 385; ibid., 2d ed., 1913, p. 462.—Grabau, Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 209; Bull. New York State Mus., 45, 1901, p. 209.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 981.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 511.

Modiolopsis adrastia Billings.

Modiolopsis Adrastia Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 45. (Adv. sheets, 1862.)

Black River: St. Joseph's Island, Lake Huron.

Modiolopsis affinis Sardeson.

Modiolopsis affinis Sardeson, Bull. Minnesota Acad. Nat. Sci., 4, 1896, p. 73, pl. 2, fig. 9.

St. Peter: South St. Paul, Minnesota.

MODIOLOPSIS ALATA Ulrich. See Eurymya alata.

Modiolopsis angustata Ulrich.
Modiolopsis angustata Ulrich, Amer. Geol., 5, 1890, p. 283, fig. 10a–c.
Eden (Southgate): Covington, Kentucky.
Holotype.—Cat. No. 46241, U.S.N.M.

Modiolopsis angustifrons Whiteaves.
Modiolopsis angustifrons Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 3, 1897, p. 183, pl. 20, fig. 4.
Black River or Richmond: Lower Fort Garry, Lake Winnipeg, Manitoba.

MODIOLOPSIS ANODONTOIDES Hall. See Modiolopsis sinuata.

Modiolopsis arcuata Hall.
Modiolopsis arcuatus Hall, Pal. New York, 1, 1847, p. 159, pl. 35, fig. 8.
Avicula subarcuata Emmons, Amer. Geology, 1, pt. 2, 1855, p. 176, pl. 13, fig. 31.
Modiolopsis subarcuata D'Orbigny, Prodr. Pal., 1, 1850, p. 13.
Trenton: Herkimer, New York.

Modiolopsis arguta Ulrich.
Modiolopsis arguta Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 506, pl. 36, figs. 3–6.
Black River (Decorah): Minneapolis, St. Paul, Fountain, etc., Minnesota.
Cotypes.—Cat. Nos. 46242, 46243, U.S.N.M.

MODIOLOPSIS AVICULOIDES Hall. See Prolobella aviculoides.

MODIOLOPSIS CANCELLATA Walcott. See Whiteavesia cancellata.

Modiolopsis capax Miller.
Modiolopsis capax Miller, N. A. Geol. Pal., 1889, pp. 489, 490, fig. 851.
Richmond: Versailles, Indiana.
Observation.—Belongs to M. pholadiformis group. Not recognizable from description or figure.

MODIOLOPSIS CARINATA Hall. See Goniophora carinata.

MODIOLOPSIS CARROLLENSIS Worthen. See Orthodesma subnasutum.

Modiolopsis chatfieldensis Ulrich.
Modiolopsis chatfieldensis Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 508, pl. 36, figs. 9–10.
Black River (Decorah): Chatfield, Minnesota.
Holotype.—Cat. No. 46244, U.S.N.M.

MODIOLOPSIS CINCINNATIENSIS Hall and Whitfield. See Whiteavesia cincinnatiensis.

Modiolopsis concava Ulrich.
Modiolopsis concava Ulrich, 19th Ann. Rep. Geol. Nat. Hist. Surv. Minnesota, 1892, p. 227, fig. 13; Geol. Minnesota, pt. 2, 1894, p. 509, pl. 36, figs. 15, 16, 16a.
Black River (Decorah): Near Cannon Falls, Minnesota.
Holotype.—Cat. No. 46246, U.S.N.M.

Modiolopsis concentrica Hall and Whitfield.
Modiolopsis concentrica Hall and Whitfield, Pal. Ohio, 2, 1875, p. 86, pl. 2, fig. 18.—Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 510, pl. 37, figs. 15 and 16.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 1009, pl. 47, fig. 3.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 512, fig. 686a.—Foerste, Bull. Sci. Lab. Denison Univ., 17, 1914, p. 283.
Richmond (Waynesville): Waynesville, etc., Ohio; Indiana; Kentucky.
Plesiotypes.—Cat. No. 46245, U.S.N.M.

Modiolopsis concinna Savage.
Modiolopsis concinna Savage, Bull. Geol. Surv. Illinois, 23, 1913, p. 54, pl. 2, fig. 2.
Upper Medinan (Girardeau): Near Thebes, Illinois.

Modiolopsis(?) consimilis Ulrich.
Modiolopsis(?) consimilis Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 505, pl. 42, figs. 17, 18.
Stones River (Murfreesboro): Murfreesboro, Tennessee.
Holotype.—Cat. No. 46247, U.S.N.M.

Modiolopsis contigua Sardeson.
Modiolopsis contigua Sardeson, Bull. Minnesota Acad. Nat. Sci., 4, 1896, p. 72, pl. 2, fig. 8.
St. Peter: South St. Paul, Minnesota.

MODIOLOPSIS CORRUGATA Miller and Faber. See Whiteavesia corrugata.

Modiolopsis cuneiformis James. Not recognized.
Modiolopsis cuneiformis James, Paleontologist, No. 3, 1879, p. 23.
Maysville or Richmond: Near Lebanon, Ohio.

Modiolopsis curta Hall. Not recognized.
Modiolopsis curta Hall, Pal. New York, 1, 1847, p. 297, pl. 81, fig. 4; pl. 82, figs. 2a-d.—Nicholson, Rep. Pal. Prov. Ontario, pt. 2, 1875, p. 35, fig. 11a.
Lyonsia curta Emmons, Amer. Geology, 1, pt. 2, 1855, p. 171.
Cincinnatian (Pulaski): Loraine, Rodman, Rome, etc., New York.
Observation.—Hall's figures, plate 81, fig. 4, and plate 82, fig. 2t, are apparently of Ischyrodonta unionoides; plate 82, fig. 2a, is of Pterinea demissa and plate 82, fig. 2c, is of a small Cyrtodonta from Mineral Point, Wisconsin.

Modiolopsis depressa Weller.
Modiolopsis depressa Weller, Geol. Surv. New Jersey, Pal., 3, 1903, p. 171, pl. 11, fig. 8.
Trenton: Jacksonburg, New Jersey.

Modiolopsis dictæus Hall.
Modiolopsis dictæus Hall, 20th Rep. New York State Cab. Hist., 1868, p. 338, pl. 14 (5), fig. 7; rev. ed., 1870, p. 385, pl. 14, fig. 7.
Niagaran (Racine): Racine, Wisconsin; Bridgeport, Illinois.

MODIOLOPSIS DUBIA Hall. See Goniophora dubia.

Modiolopsis dychii Miller.
Modiolopsis dychii Miller, 18th Ann. Rep. Indiana Dep. Geol. Nat. Res., 1894, p. 331, pl. 8, figs. 4, 5 (adv. sheets, 1892).
Richmond: Lebanon, Ohio.
Observation.—Not recognizable. Probably based on a crushed specimen.

Modiolopsis excellens Ulrich.
Modiolopsis excellens Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 511, pl. 36, figs. 13 and 14.
Richmond (Maquoketa): Spring Valley and Granger, Minnesota.

Modiolopsis exilis Billings.
Modiolopsis exilis Billings, Pal. Foss., Geol. Surv. Canada, 2, pt. 1, 1874, p. 132, pl. 8, fig. 5, 5a.—Ami, Proc. Trans. Nova Scotia Inst. Sci., 8, 1895, p. 414 (loc. occ.).
Silurian: Arisaig, Nova Scotia.

Modiolopsis expansa Branson.
Modiolopsis expansa Branson, Trans. Acad. Sci. St. Louis, 18, No. 4, 1909, p. 42, pl. 7, figs. 5, 6.
Black River (Auburn—Decorah): Lincoln County, Missouri.

MODIOLOPSIS FABA Hall. See Colpomya faba and C. faba pusilla.

Modiolopsis fabæformis Raymond.
Modiolopsis fabæformis Raymond, Amer. Jour. Sci. (4), 20, 1905, p. 374.—Whiteaves, Ottawa Nat., 22, 1908, p. 110, pl. 3, figs. 7–9.
Chazyan: Valcour Island, New York (Valcour); Hogback, near Ottawa, Ontario (Aylmer).

Modiolopsis faberi Miller.
Modiolopsis faberi Miller, N. A. Geol. Pal., 1889, p. 490, fig. 852, 853.
Maysville (Fairmount): Cincinnati, Ohio.

Modiolopsis fountainensis Sardeson.
Modiolopsis fountainensis Sardeson, Bull Minnesota Acad. Nat. Sci., 4, 1896, p. 71, pl. 4, fig. 7.
St. Peter: Below Fountain, Minnesota.

MODIOLOPSIS GESNERI Billings. See Endodesma gesneri.

MODIOLOPSIS GIBBA Miller. See Modiolodon? gibbus.

Modiolopsis gregalis Sardeson.
Modiolopsis gregalis Sardeson, Bull. Minnesota Acad. Nat. Sci., 4, 1896, p. 72, pl. 2, figs. 10–12.
St. Peter: South St. Paul and Daytons Bluff, Minnesota.

Modiolopsis jerseyensis Weller.
Modiolopsis jerseyensis Weller, Geol. Surv. New Jersey, Pal., 3, 1903, p. 170, pl. 11, fig. 9.
Black River (Jacksonburg): Jacksonburg, New Jersey.

Modiolopsis lata Hall.
Modiolopsis latus Hall, Pal. New York, 1, 1847, p. 160, pl. 35, figs. 10a, b.
Cypricardites latus Miller, N. A. Geol. Pal., 1889, p. 477 (gen. ref.).
Palæarca lata Hall, 12th Rep. New York State Cab. Nat. Hist., 1859, p. 71 (gen. ref.).
Trenton: Watertown, New York.

Modiolopsis leightoni Williams.
Modiolopsis leightoni Williams, Proc. U. S. Nat. Mus., 45, 1913, p. 346, pl. 31, figs. 7–10.
Silurian (Pembroke): Leighton Cove, Washington County, Maine.
Cotypes.—Cat. No. 58974, U.S.N.M.

Modiolopsis leightoni quadrata Williams.
Modiolopsis leightoni var. quadrata Williams, Proc. U. S. Nat. Mus., 45, 1913, p. 347, pl. 31, figs. 12, 13.
Silurian (Pembroke): Leighton Cove, Washington County, Maine.
Cotypes.—Cat. No. 58975, U.S.N.M.

Modiolopsis litoralis Sardeson.
Modiolopsis litoralis Sardeson, Bull. Minnesota Acad. Nat. Sci., 4, 1896, p. 72, pl. 2, figs. 13–16.
St. Peter: South St. Paul and Highland Park, Minnesota.

Modiolopsis longa Miller and Faber.

Modiolopsis longa Miller and Faber, Jour. Cincinnati Soc. Nat. Hist., 15, 1892, p. 80, pl. 1, figs. 2, 3.

Maysville (Fairmount): Cincinnati, Ohio.

Modiolopsis maia Billings.

Modiolopsis Maia Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 44, figs. 46a, b (adv. sheets, 1862); Geol. Canada, Geol. Surv. Canada, 1863, p. 143, figs. 80a, b.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 408, figs.

Trenton: East of Blue Point, Lake St. John, Canada.

Modiolopsis meyeri Billings.

Modiolopsis Meyeri Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 42, fig. 44 (adv. sheets, 1862); Geol. Canada, Geol. Surv. Canada, 1863, p. 173, fig. 158.—Lesley, Geol. Pennsylvania, Rep. P 4, 1889, p. 408, fig.

Trenton: Ottawa, Ontario.

Modiolopsis? (Colpomya?) milleri Ulrich.

Modiolopsis milleri Ulrich, Amer. Geol. 5, 1890, p. 274, fig. 3a–d.

Maysville (Fairmount): Cincinnati, Ohio.

Cotypes.—Cat. No. 46248, U.S.N.M.

Modiolopsis modiolaris (Conrad).

Pterinea modiolaris Conrad, 2d Ann. Rep. Geol. Surv. New York, 1838, p. 118.

Cypricardites modiolaris Emmons, Nat. Hist. New York Geol., 2, 1842, p. 403, fig. 4.

Cypricardia modiolaris Owen, Amer. Jour. Sci. Arts, 47, 1844, p. 379, fig. 4.

Modiolopsis modiolaris Mall, Pal. New York, 1, 1847, p. 294, pl. 81, figs. 1a–g; pl. 82, fig. 1; Geol. Lake Sup. Land Dist., Foster and Whitney's Rep., 1851, p. 214, pl. 31, figs. 2a–d.—McCoy, British Pal. Rocks and Foss., 1854, p. 267, pl. 1, figs. 17, 18.—Billings, Canadian Nat. and Geol., 1, 1856, p. 44, fig. 8.—Rogers, Geol. Pennsylvania, 2, pt. 2, 1858, p. 820, fig. 618.—Emmons, Man. Geol., 1860, p. 102, fig. 4.—Lincklaen, 14th Rep. New York State Cab. Nat. Hist., 1861, pl. 4, figs. 10, 11.—Billings, Geol. Canada, Geol. Surv. Canada, 1863, p. 213, fig. 217.—Chapman, Canadian Jour., n. s., 7, 1862, p. 117, fig. 111; ibid., 8, 1863, p. 206, fig. 206; Expos. Min. Geol. Canada, 1864, p. 120, fig. 111; p. 178, fig. 206.—Miller, Cincinnati Quart. Jour. Sci., 1, 1874, p. 149, fig. 17.—Roemer, Leth. geog., 1, Leth. Pal., Atlas, 1876, pl. 4, fig. 19.—Zittel, Handb. Pal., 2, 1881, p. 44, fig. 57.—Lesley, Geol. Surv. Pennsylvania, Rep., P 4, 1889, p. 409, figs.—Bigot, Bull. Soc. Geol. France, 3d ser., 17, 1889, p. 792.—Miller, N. A. Geol. Pal., 1889, p. 490, fig. 854.—Ulrich, Geol. Minnesota. 3, pt. 2, 1894, p. 481, figs. 37a, b.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 512, figs. 687, 688.—Bassler, Bull. Virginia, Geol. Surv., 2a, 1909, pl. 14, fig. 8.—Foerste, Bull. Sci. Lab. Denison Univ., 17, 1914, p. 281, pl. 3, fig. 1; pl. 5, figs. 1, 2.

Cypricardites angustifrons Conrad, 5th Ann. Rep. New York Geol. Surv., 1841, p. 52.—Emmons, Nat. Hist. New York, 2, 1842, p. 405, fig. 1.

Cypricardites ovata Conrad, 5th Ann. Rep. New York Geol. Surv., 1841, p. 52.—Emmons, Nat. Hist. Geol. New York, 2, 1842, p. 405, fig. 2.

Lyonsia submodiolaris D'Orbigny, Prod. Pal., 1, 1850, p. 11 (proposed for Modiolopsis modiolaris Hall, 1847; not M. modiolaris McCoy, 1844).—Emmons, Amer. Geol., 1, pt. 2, 1855, p. 171, pl. 17, fig. 8, 8a.

Cincinnatian: Pulaski, Oswego County, etc., New York (Pulaski); Pennsylvania; Virginia; Cincinnati, Ohio, and vicinity.

Plesiotype.—Cat. No. 46249, U.S.N.M. (Ulrich)

MODIOLOPSIS MODIOLARIS Hall and Whitfield. See Modiolodon obtusus.

MODIOLOPSIS MODIOLARIS Meek and Worthen. See Whiteavesia modioliformis.

Modiolopsis mytiloides Hall.
Modiolopsis mytiloides Hall, Pal., New York, 1, 1847, p. 157, pl. 35, figs. 4a–b.—Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 508, pl. 36, fig. 8.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 511, fig. 686b.
Trenton: Middleville, New York; Goodhue and Fillmore Counties, Minnesota (Prosser); Oshkosh, Wisconsin; etc.
Plesiotype.—Cat. No. 46250, U.S.N.M.

Modiolopsis nais Billings.
Modiolopsis Nais Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 45, fig. 47a, b (adv. sheets, 1862); Geol. Canada, Geol. Surv. Canada, p. 143, fig. 81a, b.
Black River (Leray): Pauquettes Rapids, Ottawa River, Canada.

Modiolopsis nana Ulrich.
Modiolopsis nana Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 507, pl. 36, fig. 7.
Trenton (Prosser): Near Cannon Falls, Minnesota.
Holotype.—Cat. No. 46251, U.S.N.M.

MODIOLOPSIS NASUTUS Hall. See Orthodesma nasutum.

MODIOLOPSIS NILESI Whitfield. See Edmondia nilesi.

MODIOLOPSIS? NUCULIFORMIS Hall. See Ctenodonta nuculiformis.

Modiolopsis oblonga James. Not recognized.
Modiolopsis subspatulata James (not Hall, 1847), Paleontologist, No. 3, 1879, p. 23.
Modiolopsis oblonga James, ibid., No. 6, 1882, p. 53.
Richmond: Clinton County, Ohio.

MODIOLOPSIS OBLONGA Ulrich. See Whiteavesia oblonga.

Modiolopsis obsoleta Ulrich.
Modiolopsis obsoleta Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 509, pl. 36, figs. 11 and 12.
Black River (Decorah): Near Cannon Falls, Minnesota.
Holotype.—Cat. No. 46253, U.S.N.M.

Modiolopsis obtusa (Hall).
Modiola obtusa Hall, Pal. New York, 1, 1847, p. 40, pl. 10, fig. 1.
Modiolopsis obtusa Miller, N. A. Geol. Pal., 1889, p. 490 (gen. ref.).
Black River (Lowville): Watertown, New York.

Modiolopsis occidens Walcott.
Modiolopsis occidens Walcott, Mon. U. S. Geol. Surv., 8, 1894, p. 77, pl. 1, fig. 5; pl. 11, figs. 14, 14a.
Upper Pogonip: Fish Creek Mountains, and Lone Mountain, Nevada.
Cotypes.—Cat. Nos. 17287, 17288, U.S.N.M.

Modiolopsis orthonota (Conrad).
Unio orthonotus Conrad, 3d Ann. Rep. New York State Geol. Surv., 1839, p. 66.
Cypricardia orthonota Hall, Geol. Rep. 4th Dist., New York, 1843, p. 48, figs. 8, 9; tab. ill. 2, figs. 8, 9.—Owen, Amer. Jour. Sci. Arts, 48, 1845, p. 300, figs. 8, 9.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 176, figs.

Modiolopsis orthonota—Continued.
Modiolopsis orthonota Hall, Pal. New York, 2, 1852, p. 10, pl. 4a, figs. 1, a, b, c.—Lincklaen, 14th Rep. New York State Cab. Nat. Hist., 1861, pl. 5, figs. 8, 9.—Nicholson, Rep. Pal. Prov. Ontario, pt. 2, 1875, p. 48 (loc. occ.).—Grabau, Bull. New York State Mus., 45, 1901, p. 209, fig. 137; Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 290, fig. 137.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 512, fig. 689.
Upper Medinan: Lockport, Medina, etc., New York; Ontario.
Plastotype.—Cat. No. 46197, U.S.N.M.

MODIOLOPSIS ORTHONOTA Meek and Worthen. See Endodesma orthonotum.

Modiolopsis ovata Hall.
Modiolopsis ovatus Hall, Pal. New York, 2, 1852, p. 101, pl. 30, figs. 2a, b.
Upper Clinton: Mohawk, New York.

MODIOLOPSIS OVIFORMIS Ulrich. See Modiolodon oviformis.

Modiolopsis oweni Ulrich.
Modiolopsis oweni Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 506, pl. 42, figs. 15 and 16.
Trenton (Prosser): Five miles south of Cannon Falls, Minnesota.
Holotype.—Cat. No. 46254, U.S.N.M.

Modiolopsis parallela (Conrad) Hall. Not recognized.
Modiolopsis parallela Hall, Pal. New York, 1, 1847, p. 158, pl. 35, fig. 5.
Trenton: Locality unknown.

Modiolopsis parva Ulrich.
Modiolopsis parva Ulrich, Amer. Geol., 5, 1890, p. 281, fig. 9a-f.
Eden (Southgate): Covington, Kentucky.
Cotypes.—Cat. Nos. 46255, 46256, U.S.N.M.

Modiolopsis parviuscula Billings.
Modiolopsis parviuscula Billings, Canadian Nat. Geol., 1858, 4, p. 446; Hind's Narrative Canadian Red River Expl. Exped. of 1857 and Assinniboine and Saskatchewan Exped. of 1858, 1859, 2, p. 286.—Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 3, 1897, p. 182; Ottawa Nat., 22, 1908, p. 106, pl. 3, figs. 1, 2.
Black River: Lake Winnipeg, Canada.
Chazyan: Montreal, near Cornwall (Aylmer), and Mingan Islands, Canada (Mingan).

MODIOLOPSIS PATULUS Miller. See Modiolodon patulus.

Modiolopsis perlata Hall.
Modiolopsis perlatus Hall, 28th Rep. New York State Mus. Nat. Hist., mus. ed., 1879, p. 172, pl. 27, figs. 3, 4; doc. ed., 1875, pl. 27, figs. 3, 4; 11th Ann. Rep. Indiana Dep. Geol. Nat. Hist., 1882, p. 315, pl. 28, figs. 3, 4.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 410, figs.
Niagaran (Waldron): Waldron, Indiana.

MODIOLOPSIS PHOLADIFORMIS Hall. See Whiteavesia pholadiformis.

MODIOLOPSIS PLANA Hall. See Eurymya plana.

Modiolopsis pogonipensis Walcott.
Modiolopsis Pogonipensis Walcott, Mono. U. S. Geol. Surv., 8, 1884, p. 78, pl. 1, figs. 6; pl. 11, figs. 13.
Upper Pogonip: Fish Creek Mountains and Lone Mountain, Nevada.
Cotypes.—Cat. Nos. 17292, 17293, U.S.N.M.

Modiolopsis postica Sardeson.

Modiolopsis postica Sardeson, Bull. Minnesota Acad. Nat. Sci., 4, 1896, p. 71, pl. 4, fig. 8.

St. Peter: Four miles below Dodgeville, Wisconsin.

Modiolopsis postplicata Foerste.

Modiolopsis postplicata Foerste, Bull. Sci. Lab. Denison Univ., 17, 1914, p. 284, pl. 1, fig. 4.

Cincinnatian (Pulaski): Riviere des Hurons, near St. Jean Baptiste, and at Chambly, Quebec.

Modiolopsis primigenia (Conrad).

Unio primigenius Conrad, Ann. Rep. New York State Geol. Surv., 1838, p. 113; ibid., 1839, p. 66.

Modiolopsis? primigenius Hall, Pal. New York, 2, 1852, p. 11, pl. 4 bis, figs. 2a–c (not d–e).—Lincklaen, 14th Rep. New York State Cab. Nat. Hist., 1861, pl. 5, fig. 3.—Grabau, Bull. New York State Mus., 45, 1901, p. 209, fig. 138; Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 209, fig. 138.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 512, fig. 690.

Palæarca? primigenius Hall, 12th Rep. New York State Cab. Nat. Hist., 1859, p. 83.

Cypricardia alata Hall, Geol. Rep. 4th Dist. New York, 1843, p. 48, fig. 3; tab. ill. 2, fig. 3.—Owen, Amer. Jour. Sci. Arts, 48, 1845, p. 300, figs. 3.

Avicula alata Nicholson, Rep. Pal. Prov. Ontario, pt. 2, 1875, p. 48 (loc. occ.).

Modiomorpha alta Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 412, figs.

Upper Medinan: Medina, Lockport, etc., New York; Ontario.

Modiolopsis pulchella Ulrich. See Whiteavesia pulchella.

Modiolopsis rectiformis Worthen. See Endodesma orthonotum.

Modiolopsis rectus Hall. See Matheria recta.

Modiolopsis rhomboidea Hall.

Modiolopsis rhomboidea Hall, Canadian Nat. Geol., 5, 1860, p. 148.—Dawson, Acadian Geol., Suppl. Chap., p. 68, fig. 52; ibid., 2d ed., p. 599, fig. 203.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, p. 410, figs.—Foerste, Geol. Surv. Ohio, Pal., 7, pl. 560, p. 37, figs. 8a.

Silurian: Arisaig, Nova Scotia; ?Dayton, Ohio (Brassfield).

Modiolopsis rogersensis Foerste.

Modiolopsis rogersensis Foerste, Jour. Cincinnati Soc. Nat. Hist., 21, 1914, p. 134, pl. 3, figs. 3a–d.

Trenton (Upper): Near Rogers Gap, Kentucky.

Modiolopsis ruda Billings.

Modiolopsis ruda Billings, Pal. Foss., Geol. Surv. Canada, 2, pt. 1, 1874, p. 133, pl. 8, fig. 6.

Silurian: Arisaig, Nova Scotia.

Modiolopsis senecta Sardeson. See Psiloconcha senecta.

Modiolopsis similis Ulrich.

Modiolopsis similis Ulrich, 19th Ann. Rep. Geol. Nat. Hist. Surv. Minnesota, 1892, p. 225, fig. 11; Geol. Minnesota, 3, pt. 2, 1894, p. 504, pl. 36, figs. 1, 2; pl. 42, fig. 19.—Sardeson, Amer. Geol., 30, 1902, p. 44.

Black River (Decorah): Minneapolis, Minnesota.

Holotype.—Cat. No. 46257, U.S.N.M.

Modiolopsis simulatrix Ulrich.
Modiolopsis simulatrix Ulrich, Amer. Geol., 5, 1890, p. 277, fig. 5a–c.
Eden (Southgate): Covington, Kentucky.
Holotype.—Cat. No. 46258, U.S.N.M.

Modiolopsis sinuata (Emmons).
Cypricardites sinuata Emmons, Geol. New York, 2, 1842, p. 399, fig. 3.
Modiolopsis sinuata Miller, N. A. Geol. Pal., 1889, p. 491 (gen. ref.).—Clarke and Ruedemann, Bull. New York State Mus., 65, 1903, p. 446.
Cypricardites anodontoides Emmons, Man. Geol., 1860, p. 101, fig. 91.
Modiolopsis anodontoides Hall, Pal. New York, 1, 1847, p. 298, pl. 82, figs. 3a–c.—Lincklaen, 14th Rep. New York State Cab. Nat. Hist., 1861, pl. 4, fig. 3.—(?)Miller, Cincinnati Quart. Jour. Sci., 1, 1874, p. 217.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 407, fig.
Lyonsia anodontoides Emmons, Amer. Geology, 1, pt. 2, 1855, p. 171, pl. 17, fig. 14.
Cincinnatian (Pulaski): Rodman and Lorraine, New York.

Modiolopsis sowteri Raymond.
Modiolopsis sowteri Raymond, Amer. Jour. Sci., 20, 1905, p. 374.
Chazyan (Aylmer): Aylmer, Quebec.

MODIOLOPSIS STRIATA Billings. See Pterinea striata.

Modiolopsis subalata Hall.
Modiolopsis subalatus Hall, Pal. New York, 2, 1852, p. 84, pl. 27, figs. 5, 6a, b; p. 285, pl. 59, fig. 7.—Winchell and Marcy, Mem. Boston Soc. Nat. Hist., 1, p. 109.—Hall, 20th Rep. New York State Cab. Hist., p. 339, 1868, p. 389; rev. ed., 1870, p. 386; 28th Rep. New York State Mus. Nat. Hist., doc. ed., 1875, pl. 27, figs. 5, 6; Mus. ed., 1879, p. 173, pl. 27, figs. 5, 6; 11th Ann. Rep. Indiana Dep. Geol. Nat. Hist., 1882, p. 315, pl. 28, figs. 5, 6.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 410, figs.
Cypricardia obsoleta Hall, Geol. New York, 4, 1843, p. 76, fig. 3; tab. ill. 8, fig. 3.—Owen, Amer. Jour. Sci. Arts, 48, 1845, p. 306, fig. 3.
Cypricardites obsoletus Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 178, fig.
Niagaran: Rochester, Sodus, Walcott, etc., New York (Lower Clinton); Waldron, Indiana (Waldron).

MODIOLOPSIS SUBARCUATA D'Orbigny. See Modiolopsis arcuata.

Modiolopsis subcarinata Hall.
Modiolopsis subcarinatus Hall, Pal. New York, 2, 1852, p. 101, pl. 30, figs. 3a, b, c, d, 4a.
Upper Clinton: Near Mohawk, New York.

MODIOLOPSIS SUBELLIPTICA Ulrich. See Allodesma subellipticum.

Modiolopsis subparallela Ulrich.
Modiolopsis subparallela Ulrich, Amer. Geol., 5, 1890, p. 273, figs. 2a–c.
Maysville (Fairmount): Covington, Kentucky.
Holotype.—Cat. No. 46259, U.S.N.M.

Modiolopsis subnasuta Hall.
Modiolopsis subnasutus Hall, Canadian Nat. Geol., 5, 1860, p. 148.—Dawson, Acadian Geol., 2d. ed., 1868, p. 599.
Silurian: Arisaig, Nova Scotia.

MODIOLOPSIS SUBNASUTA Meek and Worthen. See Orthodesma subnasutum.

Modiolopsis subquadrilateralis Hudson.
Modiolopsis subquadrilateralis Hudson, Bull. New York State Mus., 80, 1905, p. 286, pl. 4, figs. 8 and 9.
Chazyan (Valcour): Valcour Island, New York.

MODIOLOPSIS SUBRECTUS Miller. See Modiolodon subrectus.

Modiolopsis subrhomboidea Simpson.
Modiolopsis subrhomboidea Simpson in Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 411, fig.—Simpson, Trans. Amer. Phil. Soc., n. s., 16, 1890, p. 450, fig. 17.—Foerste, Geol. Surv. Ohio, Pal., 7, 1893, p. 560, pl. 37, fig. 7a.
Clinton: Seven miles northwest Lewistown, Mifflin County, Pennsylvania.
Upper Medinan (Brassfield): Dayton, Ohio.

MODIOLOPSIS SUBSPATULATA James. See Modiolopsis oblonga.

MODIOLOPSIS SUBSPATULATUS Hall. See Prolobella subspatulata.

Modiolopsis subtruncata Ulrich.
Modiolopsis subtruncata Ulrich, Amer. Geol., 5, 1890, p. 279, figs. 7a-c.
Eden (Economy): Cincinnati, Ohio.
Holotype.—Cat. No. 46676, U.S.N.M.

MODIOLOPSIS SULCATA Miller and Faber. See Whiteavesia corrugata.

MODIOLOPSIS? SUPERBUS Hall and Whitfield. See Whiteavesia superba.

Modiolopsis? terminalis Hall.
Modiolopsis terminalis Hall, Pal New York, 1, 1847, p. 318, pl. 33*, figs. 5a, 5b.—Miller, Cincinnati Quart. Jour. Sci., 1, 1874, p. 217.
Lyonsia terminalis Emmons, Amer. Geology, 1, pt. 2, 1855, p. 172.
Maysville: Cincinnati, Ohio.
Observation.—Possibly the same as Rhytimya mickelboroughi (Whitfield).

MODIOLOPSIS? TRENTONENSIS Hall. See Endodesma trentonensis.

MODIOLOPSIS TRUNCATUS Hall. See Modiolodon truncata.

MODIOLOPSIS? UNDULOSTRIATA Hall. See Cypricardinia undulostriata.

MODIOLOPSIS UNIONOIDES Miller. See Ischyrodonta unionoides.

Modiolopsis valida Ulrich.
Modiolopsis valida Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 521, fig. 40a.
Richmond (Waynesville): Waynesville, Ohio.
Cotypes.—Cat. No. 46260, U.S.N.M.

Modiolopsis versaillesensis Miller.
Modiolopsis Versaillesensis Miller, Cincinnati Quart. Jour. Sci., 1, 1874, p. 150, figs. 18, 19; N. A. Geol. Pal. 1889, p. 491, figs. 855, 856.—Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 521, fig. 40a.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 1010, pl. 46, figs. 7, 7a.
Richmond (Waynesville): Versailles, Indiana.
Plesiotypes.—Cat. No. 46261, U.S.N.M.

MODIOMORPHA Hall. Genotype: Pterinea concentrica Conrad.
Modiomorpha Hall, Prelim. Notice Lamel., pt. 2, 1869, p. 72; 23d Rep. New York State Cab. Nat. Hist., 1873, pp. 14-16; Pal. New York, 5, pt. 1, Lam. 2, 1885, p. 13.—Nettelroth, Kentucky Foss. Shells, Geol. Surv. Kentucky, 1889, p. 215.—Miller, N. A. Geol. Pal., 1889, p. 491.—Koken, Die Leitfossilien, Leipzig, 1896, p. 521.—Grabau, Bull. Buffalo Soc. Nat. Sci., 4, 1899, p. 249.—Dall, Zittel-Eastman Textb. Pal., 2d ed., 1913, p. 462.

Modiomorpha acuminata Parks.

Modiomorpha acuminata Parks in Tyrrell, 22d Rep. Ontario Bur. Mines, 1913, p. 36.

Niagaran (Guelph): Severn River, Ontario.

MODIOMORPHA ALTA Lesley. See Modiolopsis primigenia.

Monilipora macrostoma Roemer. Not recognized.

Monilipora macrostoma Roemer Leth. geog., pt. 1, Leth. Pal., 1883, p. 526.

"Kohlenkalke": Louisville, Kentucky.

MONOBOLINA REFULGENS Matthews. See Obolus(?) refulgens.

MONOCRATERION Torell.

Monocraterion Torell, Lunds Univers. Arsskrift, 6, 1869, p. 13.—Miller, N. A. Geol. Pal., 1889, p. 519.—Matthew, Trans. Royal Soc. Canada, 8, sec. 4, 1891, p. 160; The Irish Naturalist, 1901, p. 135.

Monocraterion lesleyi Prime.

Monocraterion lesleyi Prime, Geol. Surv. Pennsylvania, Rep. PP, 1878, p. 79, pl. 5, fig. 1.—Lesley, ibid., Rep. P 4, 1889, p. 417, figs.

Calciferous?: Northampton, Lehigh, and Bucks Counties, Pennsylvania.

Monograpsus Emmons. Genotype: M. elegans Emmons.

Monograpsus Emmons, Amer. Geol., 1, pt. 2, 1855, p. 106.

Monograptus Miller, N. A. Geol. Pal., 1889, p. 196.

Observation.—Not recognized. The types are lost and the species can not be identified.

Monograpsus elegans Emmons. Not recognized.

Monograpsus elegans Emmons, Amer. Geol., 1, pt. 2, 1855, p. 106, pl. 1, fig. 27.

Monograptus elegans Elles and Wood, Mon. British Grapt. Pal. Soc., 1903, p. 38.

Didymograptus? elegans Ruedemann, Mem. New York State Mus., 11, pt. 2, 1908, pp. 255, 256.

"Taconic" (Middle Ordovician): Augusta County, Virginia.

Monograpsus rectus Emmons. Not recognized.

Monograpsus rectus Emmons, Amer. Geol., 1, pt. 2, 1856, p. 107, fig. 28, pl. 1.

Didymograptus rectus Ruedemann, Mem. New York State Mus., 11, pt. 2, 1908, p. 256.

"Taconic shales": Columbia County, New York.

MONOGRAPTUS Geinitz. Genotype: Graptolithus priodon Bronn.

Monograpsus Geinitz, Bull. Soc. Geol. France, 2d ser., 9, 1852, p. 187; Zeits. d. d. geol. Gesell., 3, 1852, p. 389; Amer. Jour. Sci. Arts, 2d ser., 14, 1852, p. 129.

Monograptus Hall, 20th Rep. New York State Cab. Hist., 1868, p. 217.—Lapworth, Geol. Mag., 2d ser., 3, 1876, p. 314.—Zittel, Handb. Pal., 1, 1879, p. 297.—Jaekel, Zeits. d. d. geol. Gesell., 41, 1889, p. 660.—Perner, Etudes sur les Grapt. de Boheme, pt. 1, Prague, 1894, p. 4.—Wiman, Bull. Geol. Inst. Univ. Upsala, 2, pt. 2, 1896, p. 267.—Gurich, Verh. d. Russ.-Kais. Mineral Gesell. zu St. Petersburg, 2d ser., 32, 1896, p. 109.—Koken, Die Leitfossilien, Leipzig, 1896, p. 329, fig. 238.—Gurich, Zeits. d. d. geol. Gesell., 48, 1896, p. 954.—Walther, ibid., 49, 1897, p. 251.—Roemer and Frech, Leth. geog., 1, Theil, Leth. Pal., 1, 3 Lief., 1897, p. 638.—Ruedemann, Amer. Nat., 32, 1898, p. 3; Zittel-Eastman Textb. Pal., 1, 1900, p. 117.—Grabau and Shimer, N. A. Index Fossils, 1, 1906, p. 34.—Ruedemann, Mem. New York State Mus., 11, pt. 2, 1908, p. 449; Zittel-Eastman Textb. Pal., 2d ed., 1913, p. 132.

MONOGRAPTUS—Continued.

Lomatoceras Bronn, Leth. Geog., 1, 1834, pp. 55.—Gurley, Jour. Geol., 4, 1896, p. 79.

Monoprion Barrande, Grapt. de Boheme, 1850, p. 14.

Lagenograptus Hall, 20th Rep. New York State Cab. Nat. Hist. (rev. ed.), 1870, p. 261.

Monograptus argutus Lapworth.

Monograptus argutus Lapworth, Geol. Mag., 2d ser., 3, 1876, p. 318, pl. 10, figs. 13a–c.—Elles and Wood, Mon. British Grapt., 8, 1911, p. 408, pl. 40, figs. 3a–e.

Silurian: Scotland and Wales (Llandovery-Birkhill); Blaylock Mountain, Montgomery County, Arkansas (Blaylock) [Ulrich].

Monograptus capillaceus Tullberg.

Monograptus capillaceus Tullberg, Skanes Grapt., 2, 1883, p. 24, pl. 2, figs. 28, 29.—Elles and Wood, Mon. British Grapt., 8, 1911, p. 458, pl. 46, figs. 4a–d.

Silurian: Scotland, Wales, and England (Wenlock); Twelve miles northeast of Ketchum, Idaho [Ulrich].

Monograptus clintonensis (Hall).

Graptolithus clintonensis Hall, Geol. New York, 4th Dist., 1843, pp. 74, 72, fig. 12, Pal. New York, 2, 1851, p. 39, pl. A 17, fig. 1; Can. Org. Rem., dec. 2, 1859; pp. 25, 27, 29; pl. B, figs. 1–4; 20th Ann. Rep. New York State Cab. Nat. Hist., 1867, pp. 195, 197; pl. 1, figs. 1–4.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 264, fig.

Lagenograptus clintonensis Hall, 20th Ann. Rep. New York State Cab. Nat. Hist., rev. ed., 1870, p. 261, pl. 1, figs. 1–4.

Monograptus clintonensis Geinitz, Die Graptolithen, 1852, p. 58.—Lapworth, Geol. Mag., 7, 1880, p. 68.—Geinitz, Mitth. kon. min.-geol. praeh. Mus. Dresden, 9 heft, 1890, p. 19.—Elles and Wood, Mon. British Grapt., Pal. Soc., 1903, p. 33.—Grabau and Shimer, N. A. Index Fossils, 1, 1906, p. 34, fig. 55b.—Ruedemann, Mem. New York State Mus., 11, pt. 2, 1908, p. 450, pl. 29, fig. 1, figs. 425–431.

Lomatoceras clintonensis Gurley, Jour. Geol., 4, 1896, p. 308 (gen. ref.).

Monograptus priodon Bronn mut. clintonensis Frech, Leth. geog., 1, Theil, Leth. Pal., 1, 2 Lief., 1897, p. 641.

Lower and Upper Clinton: Sodus (Williamson), Rochester, etc., New York; Pennsylvania; Nova Scotia; etc.

Monograptus communis (Lapworth).

Monograptus convolutus var. communis Lapworth, Geol. Mag., 2d ser., 3, 1876, p. 358, pl. 13, figs. 4a, b.

Monograptus communis Elles and Wood, Mon. British Grapt., 8, 1911, p. 480, pl. 49, figs. 1a–e.

Silurian: Scotland, Wales, and Ireland (Llandovery); twelve miles northeast of Ketchum, Idaho [Ulrich].

Monograptus convolutus (Hisinger).

Prionotus convolutus Hisinger, Leth. Suec. Supp., 1837, p. 114, pl. 35, fig. 7.

Graptolithus convolutus Carruthers, Geol. Mag., 5, 1868, p. 127, pl. 5, fig. 1.

Monograptus convolutus Tullberg, Grapt. desc. by Hisinger, 1881, p. 14, pl. 2, figs. 13–16; Siljansomrad Grapt., 2, 1892, p. 30, pl. 3, figs. 5–11.—Perner, Grapt. de Boheme, 1897, p. 13, pl. 12, figs. 26–29; pl. 13, fig. 41, fig. 10.—Elles and Wood, Mon. British Grapt., 8, 1911, p. 467, pl. 47, figs. 1a–d.

Silurian: Ireland, Scotland, and Wales (Llandovery); twelve miles northeast of Ketchum, Idaho [Ulrich].

MONOGRAPTUS CONVOLUTUS var. COMMUNIS Lapworth. See Monograptus communis.

Monograptus convolutus coppingeri Etheridge.
Monograptus convolutus var. Coppingeri Etheridge, Quart. Jour. Geol. Soc. London, 34, 1878, p. 577, pl. 25, fig. 1.
Lomatoceras convolutum coppingeri Gurley, Jour. Geol., 4, 1896, p. 100 (gen. ref.).
Niagaran: Thank God Harbor, Arctic America.

Monograptus delicatulus Elles and Wood.
Monograptus delicatulus Elles and Wood, Monog. British Grapt., 8, 1911, p. 478, pl. 47, figs. 2a and b.
Silurian: South Scotland (Llandovery); twelve miles northeast of Ketchum, Idaho [Ulrich].

Monograptus denticulatus Törnquist.
Monograptus denticulatus Törnquist, Mon. Scanian Rastrites beds, 1899, p. 18, pl. 3, figs. 19-23.—Elles and Wood, Monog. British Grapt., 8, 1911, p. 474, pl. 48, figs. 2a-f.
Silurian: South Scotland (Llandovery); twelve miles northeast of Ketchum, Idaho [Ulrich].

Monograptus distans (Portlock).
Graptolithus (Prionotus) sedgwickii var. distans Portlock, Geol. Rep. Londonderry, 1843, p. 319, pl. 19, figs. 4a and b.
Monograptus distans Elles and Wood, Mon. British Grapt., 8, 1911, p. 433, pl. 43, figs. 6a-d.
Silurian: Scotland and Ireland (Upper Llandovery); Blaylock Mountain, Montgomery County, Arkansas (Blaylock) [Ulrich].

MONOGRAPTUS ELEGANS Emmons. See Monograptus? elegans.

Monograptus flemingi (Salter).
Graptolithus Flemingii Salter, Quart. Jour. Geol. Soc., 8, 1852, p. 390, pl. 21, figs. 5a, b, 6, 7a, b.
Monograptus Flemingii Lapworth, Geol. Mag., 2d ser., 3, 1876, p. 504, pl. 20, fig. 8.—Tullberg, Skanes Grapt., Svensk. Geol. Undersokn., ser. C, No. 55, 1883, p. 23, pl. 2, fig. 25.—Elles, Quart. Jour. Geol. Soc., 46, 1900, p. 402, figs. 11 and 14.—Elles and Wood, Mon. British Grapt., 8, 1911, p. 425, pl. 43, figs. 5a-d.
Silurian: England and Scotland (Upper Wenlock); twelve miles northeast of Ketchum, Idaho [Ulrich].

MONOGRAPTUS GRACILIS Whitfield. See Nemagraptus gracilis.

Monograptus gregarius Lapworth.
Graptolites Nilssoni Harkness, Quart. Jour. Geol. Soc., 7, 1851, p. 61, pl. 1, figs. 7a-d.—Nicholson, Quart. Jour. Geol. Soc., 24, 1868, p. 537, pl. 20, fig. 19.
Monograptus gregarius Lapworth, Geol. Mag., dec. 2, 3, 1876, p. 317, pl. 10, figs. 12a-c; Cat. West Scott. Foss., 1876, pl. 1, fig. 7; Proc. Belfast Nat. Field Club, 1877, p. 131, pl. 5, fig. 4.—Tornquist, Siljansomr. Graptol. Acta Univ., Lund., 28, 1892, p. 8; Monograptidae of Scanian Rastrites Beds, Lunds Univ. Arssk., 35, pt. 2, 1899, p. 4, pl. 1, figs. 1-6.—Elles and Wood, Mon. British Grapt., 8, 1911, p. 365, pl. 36, figs. 3a-d.
Silurian: Scotland, Ireland, Wales (Llandovery—Birkhill); Blaylock Mountain, Montgomery County, Arkansas (Blaylock) [Ulrich].

Monograptus intermedius (Carruthers).

Graptolithus intermedius Carruthers, Geol. Mag., 5, 1868, p. 126, pl. 5, fig. 18.

Graptolithus acutus Hopkinson, Geol. Mag., 9, 1872, p. 504, pl. 12, fig. 4.

Monograptus intermedius Lapworth, Geol. Mag., 2d ser., 3, 1876, p. 316, pl. 10, figs. 10a–c.—Elles and Wood, Mon. British Grapt., 8, 1911, p. 485, pl. 49, figs. 3a–c.

Silurian: Scotland, Ireland, and Wales (Llandovery); twelve miles northeast of Ketchum, Idaho [Ulrich].

Monograptus priodon (Bronn).

Lomatoceras priodon Bronn, Leth. Geog., 1, 1835, p. 56, pl. 1, fig. 13.

Graptolithus priodon Barrande, Grapt. de Boheme, 1850, p. 38, pl. 1, figs. 3–9, 14.—Suess, Bohm. Grapt., 1851, p. 25, pl. 8, fig. 5.

Monograptus priodon Geinitz, Die Graptolithen, 1852, p. 43, pl. 3, figs. 20–24, 26, 28–30.—Richter, Aus. dem Thuring. Schiefergeb., 4, Zeitschr., d. deutsch. geol. Gesell., 23, 1871, pl. 5, fig. 1; ibid., 5, 27, 1875, p. 269, pl. 7, fig. 7.—Lapworth, Scottish Monograptidae, Geol. Mag., 2d ser., 3, 1876, p. 21; Grapt. Co. Down, Proc. Belfast Nat. Field Club, 1877, p. 129, pl. 5, fig. 24.—Linnarsson, Gotl. Grapt. K. Svensk. Vet. Akad. Forhandl., 1879, p. 24, pl. 10, figs. 1–12.—Tornquist, Om Nagra fran Dalarne, Geol. Foren. i. Stockholm Forhandl., 5, 1881, p. 737, pl. 17, fig. 3.—Linnarsson, Grapt. med. M. turriculatus vid Klubbuden Geol. Foren. i. Stockholm, 5, 1881, p. 509, pl. 22, figs. 3 and 4.—Tullberg, Skanes Graptoliter, 2, 1881, p. 22, pl. 2, fig. 24.—Holm, Gotl. Grapt., Bihang till K. Svensk. Vet.-Akad., Handl., 16, 1890, p. 14, fig. 28.—Geinitz, Grapt. Dresden Mus., 1890, p. 17, pl. A, fig. 16.—Tornquist, Siljansomrad. Grapt., 2, 1892, p. 13, pl. 1, figs. 22–27.—Elles and Wood, Monog. British Grapt., 8, 1911, p. 418, pl. 42, figs. 2a–e.

Graptolites priodon Nicholson, Grapt. Coniston Flags, Quart. Journ. Geol. Soc., 24, 1868, p. 540, pl. 20, fig. 6; Monog. British Grapt., 1872, p. 102, fig. 47.

Silurian: Scotland, Wales, and England (Bala—Tarannon to Lower Wenlock); twelve miles northeast of Ketchum, Idaho [Ulrich].

MONOGRAPTUS PRIODON Linnarsson. See Monograptus clintonensis.

MONOGRAPTUS PRIODON mut. CLINTONENSIS. See Monograptus clintonensis.

MONOGRAPTUS PRIODON Williams. See Monograptus priodon chapmanensis.

Monograptus priodon chapmanensis Ruedemann.

Monograptus clintonensis Dodge and Beecher, Amer. Jour. Sci., 3d ser., 43, 1892, p. 412f.

Monograptus (Graptolithus clintonensis) priodon Williams, Bull. U. S. Geol. Surv., 165, 1900, p. 46.

Monograptus priodon mut. chapmanensis Ruedemann, Mem. New York State Mus., 11, pt. 2, 1908, p. 454, pl. 29, fig. 2; figs. 432, 433.

Clinton: Chapman plantation, Aroostook Bay County, Maine; Arisaig, Nova Scotia.

MONOGRAPTUS SAGITTARIUS Whitfield. See Didymograptus sagitticaulis.

Monograptus urceolus Richter.

Monograptus urceolus Richter, Zeitschr. d. deutsch. geol. Gesell., 5, 1853, p. 462, pl. 12, figs. 29, 30.—Elles and Wood, Mon. British Grapt., 8, 1911, p. 470, pl. 48, figs. 1a–d.

Rastrites urceolus Eisel, Die Zonenfolge d. ostthuring. u. vogtland, Grapt., 1899, p. 6.

Monograptus urceolus—Continued.

Monograptus cfr. urceolus Tornquist, Rastrites and allied species of Monograptus, Lund. Univ. Arsskr., n. s., afd. 2, 3, 5, 1907, p. 18, pl. 3, figs. 5–10.

Demirastrites urceolus Eisel, Ueber zonenweise Entwick. d. Rastriten u. Demirastriten i. d. mittelsil. Grapt. Thuringens u. Sachsens, 1911, p. 15, pl. 2, figs. 25–32.

Silurian: Scotland (Llandovery); twelve miles northeast of Ketchum, Idaho [Ulrich].

MONOMORELLA Billings. Genotype: M. prisca Billings.

Monomorella Billings, Canadian Nat. Geol., n. s., 6, 1871, p. 220; Amer. Jour. Sci., 3d ser., 3, 1872, p. 358.—Davidson and King, Ann. Mag. Nat. Hist., 4th ser., 10, 1872, p. 248; Geol. Mag., 9, 1872, p. 442; Quart. Jour. Geol. Soc. London, 30, 1874, p. 155.—Zittel, Handb. Pal., 1, 1880, p. 667.—Davidson, Mon. British Foss. Brach., 5, Sil. Suppl., 1883, Pal. Soc., p. 218.—Miller, N. A. Geol. Pal., 1889, p. 354.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pp. 40, 46; 11th Ann. Rep. New York State Geol., 1894, p. 238.—Koken, Die Leitfossilien, Leipzig, 1896, p. 230, fig. 190, 191.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 190.—Schuchert, Zittel-Eastman Textb. Pal., 1900, p. 306; ibid., 1913, p. 373.

Monomorella durhamensis Whiteaves.

Monomorella Durhamensis Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 2, 1895, p. 57, pl. 9, fig. 1; pl. 15, fig. 1.

Niagaran (Guelph): Edge Mills, near Durham, Ontario.

Monomorella egani Hall and Clarke.

Monomorella egani Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pp. 42, 175, pl. 4C, fig. 16; 48th Rep. New York State Mus., 2, for 1895, 1897, p. 330, pl. 2, fig. 3; 14th Rep. State Geol. New York for 1894, 1897, p. 330, pl. 2, fig. 3.

Niagaran (Guelph): Near Grafton, Wisconsin.

Monomorella greenei Hall and Clarke.

Monomorella greenii Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pp. 42, 174 pl. 4D, figs. 5–10; 48th Rep. New York State Mus., 2, for 1895, 1897, p. 328, pl. 1, figs. 9–14; 14th Rep. State Geol. New York for 1894, 1897, p. 328, pl. 1, figs. 9–14.

Niagaran (Guelph): Near Grafton, Wisconsin; Rising Sun, Ohio.

Plastotype.—Cat. No. 49973, U.S.N.M.

Monomorella kingi Hall and Clarke.

Monomorella kingi Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pp. 42, 174, pl. 4D, figs. 1, 2; 48th Rep. New York State Mus., 2, for 1895, 1897, p. 329, pl. 2, figs. 1, 2; 14th Rep. State Geol. New York for 1894, 1897, p. 329, pl. 2, figs. 1, 2.

Niagaran (Racine?): Near Cedarburg, Wisconsin; Hawthorne, Illinois.

Monomorella newberryi Hall and Whitfield.

Monomorella newberryi Hall and Whitfield, Pal. Ohio, 2, 1875, p. 131, pl. 7, figs. 1, 2.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pl. 4C, figs. 1, 2.

Niagaran (Guelph): Genoa, Ohio.

Monomorella noveboracum Clarke and Ruedemann.

Monomorella noveboracum Clarke and Ruedemann, Mem. New York State Mus., 5, 1903, p. 39, pl. 2, figs. 1–6; pl. 3, figs. 1–7; pl. 4, fig. 38.

Niagaran (Guelph): Oak Orchard Creek, near Shelby, New York.

Monomorella orbicularis Billings.

Monomorella orbicularis Billings, Canadian Nat. Geol., n. s., 6, 1871, p. 221; Amer. Jour. Sci., 3d ser., 3, 1872, p. 359.—Davidson and King, Quart. Jour. Geol. Soc. London, 30, 1874, p. 158, pl. 17, fig. 10.—Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 2, 1895, p. 56 (loc. occ.).

Monomorella cf. orbicularis Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pl. 4C, figs. 3–5.

Niagaran (Guelph): Hespelar, Ontario; near Grafton, Wisconsin.

Monomorella ortoni Hall and Clarke.

Monomorella ortoni Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pp. 42, 175, pl. 4C, figs. 14, 15; 48th Rep. New York State Mus., 2, for 1895, 1897, p. 330, pl. 2, figs. 4, 5; 14th Rep. State Geol. New York for 1884, 1897, p. 330, pl. 2, figs. 4, 5.

Niagaran (Guelph): Rising Sun, Wood County, Ohio.

Monomorella ovata Whiteaves.

Monomorella ovata Whiteaves, Geol. Surv. Canada, Pal. Foss., 3, 1884, p. 5, pl. 2, fig. 1; pl. 8, fig. 1.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 42, pl. 4D, figs. 13–15.—Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 2, 1895, p. 56 (loc. occ.).

Niagaran (Guelph): Durham, Ontario.

Monomorella ovata lata Whiteaves.

Monomorella ovata var. lata Whiteaves, Geol. Surv. Canada, Pal. Fos., 3, 1884, p. 6, pl. 2, fig. 2; pl. 8, fig. 2.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pl. 4, figs. 11, 12; pl. 4C, figs. 17, 18.—Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 2, 1895, p. 56.

Niagaran (Guelph): Durham, Ontario; ?Hawthorne, Illinois.

Monomorella prisca Billings.

Monomorella prisca Billings, Canadian Nat. Geol., n. s., 6, 1871, p. 221; Amer. Jour. Sci., 3d ser., 3, 1872, p. 359.—Davidson and King, Quart. Jour. Geol. Soc. London, 30, 1874, p. 156, pl. 17, figs. 5–8.—Nicholson, Pal. Prov. Ontario, 1875, p. 68, fig. 38.—Zittel, Handb. Pal., 1, 1880, p. 668, fig. 492.—Miller, N. A. Geol. Pal., 1889, p. 354, fig. 585.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pl. 4C, figs. 6–13.—Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 2, 1895, p. 56 (loc. occ.).—Huene, Verh. d. Russ.-Kais. Mineral. Gesell. zu St. Petersb., 2d ser., 38. 1900, p. 194, fig. 3.—Grabau and Shimer, N. A. Index Fossils, 1, p. 190, fig. 225b–c.

Niagaran (Guelph): Hespelar and Elora, Ontario; Rising Sun, Wood County, Ohio; Hawthorne, Port Byron, and Cicero, Illinois.

MONOPRION Barrande. See Monograptus Geinitz.

MONOTRYPA Nicholson. Genotype: Chætetes undulatus Nicholson.

Monotrypa Nicholson, Pal. Tabulate Corals, 1879, p. 293.—Zittel, Handb. Pal., 1, 1880, p. 616.—Nicholson, Genus Monticulipora, 1881, pp. 102, 168.—Ulrich, Jour. Cincinnati Soc. Nat. Hist., 5, 1882, p. 153.—Foord, Contr. Micro-Pal. Cambro-Sil., 1883, p. 14.—Roemer, Leth. geog., pt. 1, Leth. Pal., 1883, p. 472.—Waagen and Wentzel, Pal. Indica, 13th ser., 1886, pp. 875, 876.—Hall and Simpson, Pal. New York, 6, 1887, p. 13.—Miller, N. A. Geol. Pal., 1889, p. 196.—Ulrich, Geol. Surv. Illinois, 8, 1890, p. 379.—Rominger. Amer. Geol., 6, 1890, pp. 117, 119.—Ulrich, Geol. Minnesota, 3, 1893, p. 303; Zittel's Textb. Pal. (Eng. ed.), 1896, p. 104; ibid., 1897, p. 275.—Simpson, 14th Ann. Rep. State Geol. New York for 1894, 1897, p. 581.—Grabau, Bull. Buffalo Soc. Nat. Sci., 6, 1899, p. 136.—Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900,

MONOTRYPA—Continued.

p. 36.—Pocta, Syst. Sil. du Centre Boheme, 8, pt. 2, 1902, p. 319.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 137.—Hennig, Archiv. fur Zool., 4, 1908, p. 46.—Bassler, Bull. U. S. Nat. Mus., 77, 1911, pp. 309, 310; Zittel-Eastman Textb. Pal., 1913, p. 339.

Ptychonema Hall and Simpson, Pal. New York, 6, 1887, pp. xiv, 14.—Miller, N. A. Geol. Pal., 1889, p. 201.—Simpson, 14th Rep. State Geol. New York for 1894, 1897, p. 583.

Monotrypa benjamini Bassler.

Monotrypa benjamini Bassler, Bull. U. S. Geol. Surv., 292, 1906, pp. 46, 47, pl. 16, figs. 6–9; pl. 26, fig. 11.

Clinton: Lockport, New York (Rochester); Osgood, Indiana (Osgood).

Cotypes.—Cat. Nos. 35500, 44121, U.S.N.M.

MONOTRYPA CORRUGATA Weller. See Cyphotrypa corrugata.

MONOTRYPA (CHÆTETES) CUMULATA Ulrich. See Dianulites petropolitana.

MONOTRYPA? FILIASA Ulrich. See Amplexopora filiosa.

Monotrypa globosa Weller.

Monotrypa globosa Weller, Geol. Surv. New Jersey, Pal., 3, 1903, p. 142, pl. 8, figs. 4–6.

Trenton: Near Beaver Run, New Jersey.

Monotrypa incerta Ami. **Not recognizable.**

Monotrypa incerta Ami, Canadian Rec. Sci., 5, 1892, p. 101.

Trenton: Quebec City, Quebec.

Monotrypa intabulata Ulrich.

Monotrypa intabulata Ulrich, Geol. Minnesota, 3, 1893, p. 305, fig. 20.

Trenton (Prosser): Goodhue and Fillmore counties, Minnesota.

Holotype.—Cat. No. 43553, U.S.N.M.

MONOTRYPA IRREGULARIS Ulrich. See Stigmatella irregularis.

Monotrypa magna Ulrich.

Monotrypa magna Ulrich, Geol. Minnesota, 3, 1893, pl. 304, p. 27, figs. 28, 29.—Sardeson, Jour. Geol., 9, 1901, p. 5, pl. A, figs. 1, 2.—Bassler, Zittel-Eastman Textb. Pal., 1913, p. 338, fig. 495.

Black River (Platteville): Dixon, Illinois; Mineral Point and Beloit, Wisconsin.

Holotype.—Cat. No. 43555, U.S.N.M.

Monotrypa? nodosa Ulrich.

Monticulipora? Ortoni (not Nicholson) Whitfield, Geol. Surv. Wisconsin, 4, 1882, p. 251, pl. 11, figs. 7, 8.

Monotrypa nodosa Ulrich, Geol. Minnesota, 3, 1893, p. 306.

Richmond (Maquoketa): Iron Ridge and Delafield, Wisconsin; Savannah, Illinois.

Cotypes.—Cat. No. 43554, U.S.N.M

Monotrypa osgoodensis Bassler.

?Astrocerium constrictum Hall, Pal. New York, 2, 1852, p. 123, pl. 34A, figs. 2a–c, 3a–e.

Monotrypa osgoodensis Bassler, Bull. U. S. Geol. Surv., 292, 1906, p. 46, pl. 16, figs. 1–5.

Clinton: Osgood, Indiana (Osgood); Lockport and Rochester, New York (Rochester).

Cotypes.—Cat. Nos. 35498, 44118, U.S.N.M.

MONOTRYPA PAVONIA Nicholson. See Escharopora pavonia.

Monotrypa pediculata Bassler.
Monotrypa pediculata Bassler, Bull. U. S. Geol. Surv., 292, 1906, p. 47, pl. 16, figs. 10–13.
Clinton: Rochester, New York (Rochester); Osgood, and near Waldron, Indiana (Osgood).
Cotypes.—Cat. No. 44119, U.S.N.M.

MONOTRYPA PETASIFORMIS Ulrich. See Amplexopora petasiformis.

MONOTRYPA QUADRATA Nicholson. See Rhombotrypa quadrata.

Monotrypa rectimuralis Ulrich.
Monotrypa rectimuralis Ulrich, Geol. Surv. Illinois, 8, 1890, p. 462, fig. 3a (p. 308), fig. 4d (p. 309), pl. 38, figs. 1–1b.—J. F. James, Jour. Cincinnati Soc. Nat. Hist., 18, 1896, p. 124.—Simpson, 14th Ann. Rep. State Geol. New York for 1894, 1897, figs. 151–153 (p. 581).
Upper Medinan (Girardeau): Alexander County, Illinois.
Cotypes.—Cat. No. 43779, U.S.N.M.

Monotrypa?? spinosula Hall and Simpson.
Species undetermined Hall, Rep. State Geol. New York for 1882, 1883, pl. 16, fig. 25.
Monotrypa? spinosula Hall and Simpson, Pal. New York, 6, 1887, p. 67, pl. 16, fig. 25.
Cayugan (Manlius): Schoharie, New York.

Monotrypa subglobosa (Ulrich).
Chætetes subglobosa Ulrich, Jour. Cincinnati Soc. Nat. Hist., 2, 1879, p. 129, pl. 12, figs. 11–11b.
Monotrypa subglobosa Ulrich, ibid., 5, 1882, p. 256.
Monotrypa turbinata Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 316 (not Chætetes turbinatum James).
Eden (Economy): Cincinnati, Ohio, and vicinity.
Cotypes.—Cat. No. 43683, U.S.N.M.

MONOTRYPA TURBINATA Nickles and Bassler. See Monotrypa subglobosa.

Monotrypa undulata (Nicholson).
Chætetes undulatus Nicholson, Geol. Mag., n. s., 2, 1875, p. 176; Pal. Province Ontario, 1875, pp. 10, 33, pl. 4, fig. 1.
Monticulipora (Monotrypa) undulata Nicholson, Paleozoic Tabulate Corals, 1879, p. 321, pl. 14, figs. 3–3b, 4, 4a; Genus Monticulipora, 1881, p. 170, fig. 32 (not fig. 33=M. undulata-hemispherica (J. F. James)).
Monotrypa undulata Ulrich, Jour. Cincinnati Soc. Nat. Hist., 5, 1882, p. 256.
Monticulipora undulata James and James, Jour. Cincinnati Soc. Nat. Hist., 10, 1888, p. 161; J. F. James, ibid., 15, 1893, p. 157.
Trenton: Belleville and Peterboro, Ontario.

Monotrypa undulata hemispherica (J. F. James).
Monticulipora (Monotrypa) undulata (part) Nicholson, Genus Monticulipora, 1881, p. 170, fig. 33a–c.
Monticulipora undulata var. hemispherica James, Jour. Cincinnati Soc. Nat. Hist., 15, 1893, p. 157, fig. 10a–c.
Monotrypa undulata hemispherica Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 317.—Bassler, Proc. U. S. Nat. Mus., 30, p. 43.
Richmond?: Toronto and Weston, Ontario.

Montrypa undulata hemispherica—Continued.

Observation.—Founded on Nicholson's figures of the "rounded or irregularly spheroidal form" of M. undulata. The varietal name is of no value until the originals of the figures or topotypes can be studied.

MONOTRYPELLA Ulrich. Genotype: M. æqualis Ulrich.

Monotrypella Ulrich, Jour. Cincinnati Soc. Nat. Hist., 5, 1882, p. 153.—Foord, Contr. Micro-Pal. Cambro-Sil., 1883, p. 15.—Foerste, Bull. Sci. Lab. Denison Univ., 2, 1887, p. 171.—Hall and Simpson, Pal. New York, 6, 1887, p. xiii.—Miller, N. A. Geol. Pal., 1889, p. 196.—Ulrich, Geol. Surv. Illinois, 8, 1890, pp. 377, 451; Zittel's Textb. Pal. (Enlg. ed.), 1896, p. 278.—Simpson, 14th Ann. Rep. State Geol. New York, for 1894, 1897, p. 581.—Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 30.—Pocta, Syst. Sil. du Centre Boheme, 8, pt. 1, 1902, p. 316.—Ulrich and Bassler, Smiths. Misc. Coll., Quart., 47, 1904, p. 43.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 131.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 749.—Bassler, Zittel-Eastman Textb. Pal., 1913, p. 336.

Monotrypella æqualis Ulrich.

Monotrypella æqualis Ulrich, Jour. Cincinnati Soc. Nat. Hist., 5, 1882, p. 247, pl. 11, figs. 3–3b; Geol. Surv. Illinois, 8, 1890, fig. 3b (p. 308), fig. 4a (p. 309).—J. F. James, Jour. Cincinnati Soc. Nat. Hist., 16, p. 201.—Simpson, 14th Ann. Rep. State Geol. New York for 1894, 1897, figs. 154–156 (p. 582).—Ulrich and Bassler, Smiths. Misc. Coll., Quart., 47, 1904, p. 44.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 856, pl. 20, figs. 4–4c.

Eden (Economy): Covington, Kentucky.

Holotype.—Cat. No. 43684, U.S.N.M.

Monotrypella? arbuscula (Hall).

Chætetes fruticosus Hall, 32d Ann. Rep. New York State Mus., 1879, p. 148 (reprint, 1880, p. 10); Rep. State Geol. New York for 1882, 1883, pl. 9, figs. 1–8.

Chætetes (Monotrypella) arbusculus Hall and Simpson, Pal. New York, 6, 1887, p. 12, pl. 9, figs. 1–3 (?4, 5), 6–8.

Monotrypella? arbusculus Grabau, Bull. New York State Mus., 92, 1906, p. 117, fig. 26.

Helderbergian (Manlius transition beds): Schoharie, New York.

Monotrypella briarea Ulrich. See Eridotrypa briareus.

Monotrypella confluens Foerste. See Homotrypa? confluens.

Monotrypella? consimilis (Hall).

Chætetes? consimilis Hall, 28th Ann. Rep. New York State Mus., doc. ed., 1876, pl. 9, figs. 7–14; 28th Ann. Rep. New York State Mus. (mus. ed.), 1879, p. 110, pl. 9, figs. 7–14; 11th Ann. Rep. Indiana Geol. Nat. Hist., 1882, p. 230, pl. 8, figs. 7–14.

Monotrypella consimilis Ulrich, Jour. Cincinnati Soc. Nat. Hist., 5, 1882, p. 248.

Niagaran (Waldron): Waldron, Indiana.

Monotrypella crassimuralis Ulrich. See Rhombotrypa crassimuralis.

Monotrypella multitabulata Ulrich. See Hallopora multitabulata.

Monotrypella quadrata Ulrich. See Rhombotrypa quadrata.

Monotrypella subquadrata Ulrich. See Rhombotrypa subquadrata.

Monotrypella trentonensis Ulrich. See Eridotrypa trentonensis.

MONTICULIPORA D'Orbigny. Genotype: M. mammulata D'Orbigny.

Monticulipora D'Orbigny, Prodr. Pal., 1, 1850, p. 25.—Edwards and Haime, Mon. British Foss. Corals., Pal. Soc., 1854, p. 264, footnote.—Pictet, Traité de Pal., 2d ed., 4, 1857, p. 443.—Milne-Edwards, Hist. Nat. des Corall, 3, 1860, p. 272.—Eichwald, Leth. Rossica, 1, 1860, p. 492.—Salter, Cat. Camb. Sil. Foss., 1873, p. 108.—Dekoninck, Nouv. Rech. Anim. Foss. Terr. Carb. Belgique, 1872, p. 141.—Lindstrom, Ann. Mag. Nat. Hist., 4th ser., 18, 1876, p. 5.—Nicholson, Pal. Tabulate Corals, 1879, p. 269.—Zittel, Handb. Pal., 1, 1880, p. 614.—Nicholson, Genus Monticulipora, 1881, p. 99.—Ulrich, Jour. Cincinnati Soc. Nat. Hist., 5, 1882, pp. 153, 232.—Roemer, Leth. geog., pt. 1, Leth. Pal., 1883, p. 468.—Foord, Contr. Micro-Pal. Cambro-Sil., 1883, p. 7.—Frech, Zeits. d. d. geol. Gesell., 37, 1885, p. 951.—Waagen and Wentzel, Pal. Indica, 13th ser., 1886, p. 874.—James, Amer. Geol., 1, 1888, p. 386.—James and James, Jour. Cin. Soc. Nat. Hist., 10, 1888, p. 158.—Miller, N. A. Geol. Pal., 1889, p. 197.—Rominger, Amer. Geol., 6, 1890, pp. 102–121.—Ulrich, Geol. Surv. Illinois, 8, 1890, pp. 370, 407; Amer. Geol., 10, 1892, p. 57; Ulrich, Geol. Minnesota, 3, 1893, p. 217.—James, Jour. Cincinnati Soc. Nat. Hist., 15, 1893, p. 155; Zittel's Textb. Pal. (Engl. ed.), 1896, p. 103, 272.—Lindstrom, Kongl. Sven. Vet. Akad. Handl., 32, No. 1, 1899, p. 52.—Sardeson, Neues Jahrb. Min., Geol. Pal., Beilage-Band, 10, 1896, p. 347.—Simpson, 14th Ann. Rep. State Geol. New York for 1894, 1897, p. 577.—Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 28.—Pocta, Syst. Sil. du Centre Boheme, 8, pt. 2, 1902, p. 312.—Ulrich and Bassler, Smiths. Misc. Coll., Quart., 47, 1904, p. 15.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 127.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 750.—Bassler, Bull. U. S. Nat. Mus., 77, 1911, p. 179; Zittel-Eastman Textb. Pal., 1913, p. 331.

Peronopora (in part) Nicholson, Genus Monticulipora, 1881, p. 215.

Observation.—Many of the above citations, especially the earlier ones, refer to Monticulipora in a broader sense than employed at present.

MONTICULIPORA ÆDILIS Dybowski. See Eridotrypa ædilis.

MONTICULIPORA ÆQUALIS James. See Monotrypella æqualis.

MONTICULIPORA AFFINIS James. See Heterotrypa affinis.

MONTICULIPORA (FISTULIPORA) ALTERNATA James and James. See Cœloclema alternatum.

MONTICULIPORA ANDREWSII James and James. See Hallopora andrewsi.

MONTICULIPORA (CONSTELLARIA) ANTHELOIDEA James and James. See Stellipora antheloidea.

MONTICULIPORA APPROXIMATA Hall. See Hallopora dalei.

Monticulipora arborea Ulrich.

Monticulipora arborea Ulrich, Geol. Minnesota, 3, 1893, p. 220, pl. 20, figs. 1–9, 13, 14; Zittel's Textb. Pal. (Engl. ed.), 1896, fig. 449 (p. 272).—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 127, fig. 186a.—Bassler, Zittel-Eastman Textb. Pal., 1913, p. 331, fig. 474.

Trenton: Cannon Falls, Minnesota, and Decorah, Iowa (Prosser); Burgin and Frankfort, Kentucky (Wilmore).

Cotypes.—Cat. Nos. 43547, 43548, U.S.N.M.

MONTICULIPORA AREOLATA J. F. James. See Aspidopora areolata.

Monticulipora? argentina Kayser.

Monticulipora argentina Kayser. Beitr. Geol. Pal. Argentin. Republik, Suppl. 3, 1876, p. 13, pl. 5, figs. 8, 9.

Ordovician: Talacastra, Argentina.

MONTICULIPORA ASPERA J. F. James. See Spatiopora aspera.

MONTICULIPORA ASPERULA James. See Petigopora asperula.

MONTICULIPORA (CHÆTETES) ATTRITUS Chamberlin. See Dekayia aspera.

MONTICULIPORA BILLINGSI FOORD. See Orbignyella billingsi.

MONTICULIPORA BRIAREA James and James. See Eridotrypa briareus.

MONTICULIPORA CALCEOLA Miller and Dyer. See Leptotrypa calceola.

MONTICULIPORA CALYCULA James and James. See Aspidopora calycula.

Monticulipora? cannonensis Ulrich.

Monticulipora? cannonensis Ulrich, Geol. Minnesota, 3, 1893, p. 221, pl. 20, 10-12.

Trenton (Prosser): Cannon Falls, Minnesota.

Holotype.—Cat. No. 43549, U.S.N.M.

Monticulipora cincinnatiensis (James).

Chætetes cincinnatiensis James, Catal. Sil. Foss. Cincinnati Group, 1875, p.

Monticulipora (Peronopora) Cincinnatiensis Nicholson, Genus Monticulip 1881, p. 226, pl. 2, figs. 6-6c.

Monticulipora cincinnatiensis Ulrich, Jour. Cincinnati Soc. Nat. Hist., 5, 188 239.—James and James, ibid., 10, 1888, p. 170.—J. F. James, ibid., 16, 1 p. 188.—Bassler, Proc. U. S. Nat. Mus., 30, 1906, p. 43.

Maysville (Corryville): Cincinnati, Ohio, and vicinity.

MONTICULIPORA CIRCULARIS James. See Calloporella circularis.

MONTICULIPORA CLAVACOIDEA James and James. See Leptotrypa clavacoidea.

Monticulipora cleavelandi James.

Monticulipora (Heterotrypa?) cleavelandi James, Paleontologist, No. 6, 1882 49, pl. 1, fig. 7.

Monticulipora cleavelandi James and James, Jour. Cincinnati Soc. Nat. Hist., 1888, p. 15, pl. 1, fig. 4.—J. F. James, ibid., 18, 1895, p. 68.—Ulrich Bassler, Smiths. Misc. Coll., Quart., 47, 1904, p. 16, pl. 6, figs. 4-6.—Bas Proc. U. S. Nat. Mus., 30, 1906, p. 44.

Richmond (Whitewater): Lynchburg and Wilmington, Ohio.

Plesiotype.—Cat. No. 43170, U.S.N.M.

Monticulipora?? clintonensis James.

Monticulipora (Heterotrypa) clintonensis James, Paleontologist, No. 6, 1882 45, pl. 1, fig. 9.

Monticulipora clintonensis James and James, Jour. Cincinnati Soc. Nat. Hist., 1888, p. 20, pl. 1, figs. 1, 1a.—J. F. James, ibid., 18, 1895, p. 73.—Nickles Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 321.—Bassler, Proc. U. S. Mus., 30, 1906, p. 45.

Richmond: Clinton County, Ohio.

Observation.—The types of this species are lost, but it is almost certain synonym for Heterotrypa subramosa (Ulrich).

MONTICULIPORA COMMUNIS James and James. See Hallopora onealli communis.

MONTICULIPORA COMPRESSA James. See Peronopora compressa.

MONTICULIPORA CONSIMILIS Ulrich. See Monticulipora lævis consimilis.

MONTICULIPORA CONTEXTA James. See Homotrypella contexta.

MONTICULIPORA CRASSIMURALIS James. See Rhombotrypa crassimuralis.

MONTICULIPORA CRUSTULATA James and James. See Chætetes crustulatus.

MONTICULIPORA CUMULATA James. See Nicholsonella cumulata.

MONTICULIPORA CURVATA James. See Homotrypa curvata.

MONTICULIPORA DALEI MILNE-EDWARDS and Haime. See Hallopora dalei.

Monticulipora Dalii White (not Milne-Edwards and Haime). Not recognized.
Monticulipora Dalii White, Wheeler's Geogr. Geol. Explor. Sur., 4, 1875, p. 66, pl. 4, fig. 5.
Trenton: Silver Canyon, Pahranagat Range, Nevada.

MONTICULIPORA DALII Hall. See Hallopora ramosa.

MONTICULIPORA DAWSONI James and James. See Homotrypa dawsoni.

MONTICULIPORA DELICATULA James and James. See Bythopora delicatula.

MONTICULIPORA DISCOIDEA James and James. See Amplexopora? discoidea.

MONTICULIPORA DUBIA James. See Diplotrypa dubia.

MONTICULIPORA DYCHEI James. See Stigmatella dychei.

MONTICULIPORA ECCENTRICA James and James. See Aspidopora eccentrica.

MONTICULIPORA ELEGANS James and James. See Discotrypa elegans.

Monticulipora epidermata Ulrich and Bassler.
Monticulipora epidermata Ulrich and Bassler, Smiths. Misc. Coll., Quart., 47, 1904, p. 17.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 857, pl. 20, figs. 5–5c; pl. 30, fig. 12.
Chætetes mammulatus Quenstedt (not Monticulipora mammulata D'Orbigny), Roehren und Sternkorallen, 1881, p. 75, pl. 46, figs. 10, 11 (not 12).
Richmond (Whitewater): Richmond, Indiana; Oxford, Ohio.
Cotypes.—Cat. No. 43172, U.S.N.M.

MONTICULIPORA FALESI James. See Prasopora falesi.

MONTICULIPORA FILIASA D'Orbigny. See Amplexopora filiasa.

MONTICULIPORA FLABELLARIS James. See Homotrypa flabellaris.

MONTICULIPORA (PERONOPORA) FRONDOSA Nicholson. See Peronopora decipiens.

MONTICULIPORA (CHÆTETES) FUSIFORMIS Chamberlin. See Lioclemella fusiformis.

MONTICULIPORA FUSIFORMIS James and James. See Lioclemella subfusiformis.

MONTICULIPORA GELASINOSA J. F. James. See Homotrypa gelasinosa.

MONTICULIPORA GRACILIS James and James. See Bythopora gracilis.

MONTICULIPORA GRACILIS var. MEEKI Nicholson. See Bythopora meeki.

MONTICULIPORA GRANDIS Ulrich. See Prasopora grandis.

MONTICULIPORA (FISTULIPORA) GRANULIFERA J. F. James. See Homotrypella granulifera.

MONTICULIPORA HOSPITALIS James and James. See Homotrypella hospitalis.

MONTICULIPORA HOSPITALIS var. LÆVIS James and James. See Monticulipora lævis.

Monticulipora hospitalis neglecta James and James.
Monticulipora hospitalis var. neglecta James and James, Jour. Cincinnati Soc. Nat. Hist., 11, 1888, p. 27, pl. 1, fig. 3.—J. F. James, ibid., 18, 1896, p. 124.—Bassler, Proc. U. S. Nat. Mus., 30, 1906, p. 45.
Richmond: Waynesville, Ohio.
Observation.—Types lost and description and figure not sufficient for recognition.

MONTICULIPORA IMPERFECTUM J. F. James. See Hemiphragma imperfectum.

MONTICULIPORA IMPLICATUM J. F. James. See Batostoma implicatum.

Monticulipora incompta Ulrich.
Monticulipora incompta Ulrich, Geol. Minnesota, 3, 1893, p. 219, pl. 15, figs. 9-12.
Black River (Decorah); Minneapolis, Minnesota.

MONTICULIPORA INFLECTA J. F. James. See Heterotrypa inflecta.

Monticulipora? insularis Seely.
Monticulipora insularis Seely, Rep. Vermont State Geol., 1906, p. 185, pl. 43, 44.
Chazyan: South Hero, Vermont.

MONTICULIPORA IRREGULARIS James and James. See Stigmatella irregularis.

MONTICULIPORA JAMESI Nicholson. See Batostoma jamesi.

MONTICULIPORA KENTUCKIENSIS James. See Hallopora multitabulata.

Monticulipora lævis Ulrich.
Monticulipora lævis Ulrich, Jour. Cincinnati Soc. Nat Hist., 5, 1882, p. 236, pl. 10, figs. 1-1b.—J. F. James, ibid., 18, 1895, p. 85.
Monticulipora hospitalis var. lævis James and James, Jour. Cincinnati Soc. Nat. Hist., 11, 1888, p. 27.
Richmond (Whitewater): Oxford, Ohio.
Cotypes.—Cat. No. 43679, U.S.N.M.

Monticulipora lævis consimilis Ulrich.
Monticulipora consimilis Ulrich, Jour. Cincinnati Soc. Nat. Hist., 5, 1882, p. 238, pl. 10, fig. 2.—J. F. James, ibid., 16, 1894, p. 189.
Monticulipora lævis consimilis Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 324.
Richmond (Whitewater): Oxford, Ohio.
Holotype.—Cat. No. 43680, U.S.N.M.

MONTICULIPORA LAMELLOSA Ulrich. See Orbignyella lamellosa.

MONTICULIPORA LENS James and James. See Calloporella circularis.

MONTICULIPORA LYCOPERDON Roemer. See Chætetes lycoperdon.

MONTICULIPORA (DEKAYIA) MACULATA J. F. James. See Dekayia maculata.

MONTICULIPORA MAMMILLOSA Simpson. See Monticulipora molesta.

Monticulipora mammulata D'Orbigny.

Monticulipora mammulata D'Orbigny, Prodr. de Pal., 1, 1850, p. 25.—Milne-Edwards and Haime, British Foss. Corals, 1854, p. 265.—Milne-Edwards, Hist. Nat. des Corall., 3, 1860, p. 276.—Ulrich, Jour. Cincinnati Soc. Nat. Hist., 5, 1882, p. 234, pl. 10, figs. 5, 5a; p. 130.—Hall, 12th Ann. Rep. Indiana Geol. Nat. Hist., 1883, p. 250, pl. 11, fig. 1.—Ulrich and Bassler, Smiths. Misc. Coll., Quart., 47, 1904, p. 16, pl. 6, figs. 1-3.—Nickles, Bull. Kentucky Geol. Surv., 5, 1905, p. 56, pl. 3, fig. 7.—Boule and Thevenin, Ann. Pal., 1, fasc. 1, 1906, p. 5, pl. 1, fig. 10, 11; pl. 2, fig. 1.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 127.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, p. 859, pl. 21, figs. 1-1c; pl. 31, figs. 1, 1a.

Chætetes mammulatus Milne-Edwards and Haime, Pol. Foss. Terr. Pal., 1851, p. 267, pl. 19, figs. 1, 1a.

Maysville (Fairmount): Cincinnati, Ohio, and vicinity.

Fragment of *holotype* and *plesiotype*.—Cat. Nos. 35114, 43682, U.S.N.M.

MONTICULIPORA MAMMULATA Nicholson. See Monticulipora molesta.

MONTICULIPORA MAMMULATA James and James. See Heterotrypa frondosa.

MONTICULIPORA MAMMULATA var. MOLESTA Ulrich. See Monticulipora molesta.

MONTICULIPORA MEEKI James and James. See Bythopora meeki.

MONTICULIPORA (FISTULIPORA) MILFORDENSIS James and James. See Ceramoporella granulosa milfordensis.

Monticulipora molesta Nicholson.

Monticulipora (Peronopora) molesta Nicholson, Genus Monticulipora, 1881, p. 224, pl. 6, figs. 2-2d.

Monticulipora mammulata var. molesta Ulrich, Jour. Cincinnati Soc. Nat. Hist., 5, 1882, p. 236.

Monticulipora mammulata Nicholson, Manual Pal., 1889, p. 355.

Monticulipora molesta J. F. James, Jour. Cincinnati Soc. Nat. Hist., 13, 1895, p. 68.—Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 325.—Hayes and Ulrich, U. S. Geol. Surv., folio 95, ill. sheet, 1903, fig. 13.

Monticulipora mammillosa (in error) Simpson, 14th Ann. Rep. State Geol. New York for 1894, 1897, p. 577, pl. 17, figs. 1-3.

Maysville: Cincinnati, Ohio, and vicinity (Bellevue); Maury County, etc., Tennessee (Leipers).

Plesiotype.—Cat. No. 35405, U.S.N.M.

MONTICULIPORA MULTITUBERCULATA Whitfield. See Rhombotrypa quadrata.

MONTICULIPORA NEWBERRYI James and James. See Aspidopora newberryi.

MONTICULIPORA NEWPORTENSIS James and James. See Atactoporella newportensis.

MONTICULIPORA (FISTULIPORA) NICHOLSONI James and James. See Ceramopora nicholsoni.

MONTICULIPORA NODULOSA James and James. See Hallopora nodulosa.

MONTICULIPORA OHIOENSIS James. See Dekayella ulrichi.

MONTICULIPORA O'NEALLI James and James. See Hallopora onealli.

MONTICULIPORA (HETEROTRYPA) O'NEALLI Nicholson. See Hallopora onealli sigillarioidea.

MONTICULIPORA (HETEROTRYPA) ONEALLI? var. COMMUNIS James. See Hallopora onealli communis.

MONTICULIPORA ORTONI James and James. See Atactoporella ortoni.

MONTICULIPORA? ORTONI Whitfield. See Monotrypa nodosa.

MONTICULIPORA (PERONOPORA?) ORTONI Nicholson. See Atactoporella ortoni.

MONTICULIPORA (FISTULIPORA) OWENI James and James. See Cœloclema oweni.

Monticulipora papillata Milne-Edwards. Not recognized.
Monticulipora papillata (not Nebulipora papillata McCoy) Milne-Edwards, Hist. Nat. des Corall., 3, 1860, p. 275.—James and James, Jour. Cincinnati Soc. Nat. Hist., 11, 1888, p. 23.—J. F. James, ibid., 13, 1895, p. 81.—Bassler, Proc. U. S. Nat. Mus., 30, 1906, p. 45.
Ordovician: Cincinnati, Ohio, etc.

Monticulipora parasitica Ulrich.
Monticulipora parasitica Ulrich, Jour. Cincinnati Soc. Nat. Hist., 5, 1882, p. 238, pl. 10, figs. 3, 3a.—J. F. James, ibid., 18, 1895, p. 81.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 862, pl. 21, figs. 2, 2b; pl. 31, fig. 2.
Richmond (Whitewater): Oxford and Hanover, Ohio; Richmond, Indiana.
Holotype.—Cat. No. 43681, U.S.N.M.

Monticulipora parasitica plana Ulrich.
Monticulipora parasitica var. plana Ulrich, Contr. Micro-Pal. Cambro-Sil., pt. 2, 1889, p. 29, pl. 8, figs. 3-3d.—Whiteaves, Pal. Foss., 3, 1895, p. 115.
Richmond (Stony Mountain): Stony Mountain, Manitoba.
Figured sections of *holotype*.—Cat. No. 43811, U.S.N.M.

MONTICULIPORA (CONSTELLARIA) PARVA J. F. James. See Constellaria parva.

MONTICULIPORA PAVONIA Milne-Edwards. See Escharopora pavonia.

MONTICULIPORA (DEKAYIA) PELLICULATA James. See Dekayia pelliculata.

MONTICULIPORA PETASIFORMIS James and James. See Amplexopora petasiformis.

MONTICULIPORA PETASIFORMIS var. WELCHI James and James. See Amplexopora petasiformis welchi.

MONTICULIPORA PETECHIALIS James and James. See Petigopora petechialis.

MONTICULIPORA PETROPOLITANA of authors. See Hindia sphæroidalis and Chætetes petropolitanus.

MONTICULIPORA (CONSTELLARIA) POLYSTOMELLA James and James. See Constellaria florida and C. polystomella.

MONTICULIPORA PROLIFICA J. F. James. See Heterotrypa subramosa prolifica.

MONTICULIPORA PUNCTATA Whitfield. See Constellaria punctata.

MONTICULIPORA PUSTULOSA James. See Amplexopora pustulosa.

MONTICULIPORA QUADRATA James and James. See Rhombotrypa quadrata.

MONTICULIPORA QUADRATA var. SUBQUADRATA James. See Rhombotrypa subquadrata.

MONTICULIPORA RAMOSA D'Orbigny. See Hallopora ramosa.

MONTICULIPORA (HETEROTRYPA) RAMOSA var. DALEI Nicholson. See Hallopora dalei.

MONTICULIPORA RAMOSA var. RUGOSA James and James. See Hallopora rugosa.

MONTICULIPORA RECTANGULARIS Whitfield. See Rhombotrypa quadrata.

MONTICULIPORA RUGOSA Milne-Edwards and Haime. See Hallopora rugosa.

MONTICULIPORA (FISTULIPORA) RUSTICA J. F. James. See Homotrypella rustica.

MONTICULIPORA (PRASOPORA) SELWYNII Nicholson. See Prasopora selwyni.

MONTICULIPORA SELWYNII J. F. James. See Prasopora simulatrix.

MONTICULIPORA (PRASOPORA) SELWYNII var. HOSPITALIS Nicholson. See Homotrypella hospitalis.

MONTICULIPORA SEPTOSA James and James. See Amplexopora septosa.

MONTICULIPORA SIMULATRIX J. F. James. See Eridotrypa simulatrix.

MONTICULIPORA SINGULARIS Simpson. See Dekayella singularis.

MONTICULIPORA STIDHAMI J. F. James. See Cyphotrypa stidhami.

MONTICULIPORA SUBCYLINDRICA James. See Amplexopora filiasa.

MONTICULIPORA (MONOTRYPA) SUBFUSIFORMIS James. See Lioclemella subfusiformis.

MONTICULIPORA SUBPULCHELLA James and James. See Heterotrypa subpulchella.

MONTICULIPORA (HETEROTRYPA) TRENTONENSIS Nicholson. See Eridotrypa trentonensis.

MONTICULIPORA TUBERCULATA James and James. See Spatiopora tuberculata.

MONTICULIPORA (MONOTRYPA) TUBERCULATA Nicholson. See Spatiopora corticans.

MONTICULIPORA TURBINATA James and James. See Chætetes turbinata.

MONTICULIPORA ULRICHI James and James. See Dekayella ulrichi.

MONTICULIPORA (MONOTRYPA) UNDULATA Nicholson. See Monotrypa undulata.

MONTICULIPORA UNDULATA var. HEMISPHERICA J. F. James. See Monotrypa undulata hemispherica.

MONTICULIPORA UNIFORMIS J. F. James. See Peronopora compressa.

MONTICULIPORA (CHÆTETES) VARIANS James. See Batostoma varians.

MONTICULIPORA VAUPELI James and James. See Nicholsonella vaupeli.

MONTICULIPORA (FISTULIPORA) VENUSTA James and James. See Crepipora venusta.

MONTICULIPORA VERRUCOSA J. F. James. See Calloporella? nodulosa.

MONTICULIPORA (MONOTRYPA) WELCHI James. See Amplexopora petasiformis welchi.

Monticulipora westoni Foord.
Monticulipora Westoni Foord, Contributions Micro-Pal. Cambro-Sil., 1883, p. 7, pl. 1, figs. 1–1b.
Trenton: Ottawa, Ontario.

MONTICULIPORA WETHERBYI Ulrich. See Orbignyella wetherbyi.

Monticulipora wetherbyi var. asperula James and James. See Petigopora asperula.

Monticulipora (Diplotrypa) whiteavesii of authors. See Prasopora selwyni, P. simulatrix orientalis and Mesotrypa whiteavesi.

Monticulipora whitfieldi James and James. See Hemiphragma whitfieldi.

Monticulipora wilmingtonense J. F. James. See Lioclema? wilmingtonense.

Monticulipora (Heterotrypa) winchelli James. See Homotrypella hospitalis.

Monticulipora (Monotrypa) wortheni James. See Homotrypa wortheni.

MOOREA Jones and Kirkby. Genotype: M. obesa Jones.
Moorea Jones and Kirkby, Quart. Jour. Geol. Soc. London, 23, 1867, p. 494.—Jones and Holl, Ann. Mag. Nat. Hist., 4th ser., 3, 1869, p. 325.—Jones and Kirkby, Proc. Geol. Assoc. London, 9, 1886, p. 508.—Jones, Monthly Micros. Jour., 1870, p. 193.—Vogdes, Ann. New York Acad. Sci., 5, 1889, p. 4.—Grabau, Bull. Buffalo Soc. Nat. Sci., 6, 1899, p. 309.—Miller, N. A. Geol. Pal., 1st App., 1892, p. 709.—Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 681.

Moorea angularis Ulrich.
Moorea angularis Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 682, pl. 43, fig. 89; pl. 46, figs. 15, 16.
Black River (Decorah): Minneapolis and near Fountain, Minnesota.
Cotypes.—Cat. Nos. 41685, 41800, U.S.N.M.

Moorea? perplexa Ulrich.
Moorea? perplexa Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 683, pl. 46, figs. 17, 18.
Black River (Decorah): Near Fountain, Minnesota.

Moorea punctata Ulrich.
Moorea punctata Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 682, pl. 43, figs. 84, 88.
Black River (Decorah): St. Paul, Minnesota.
Cotypes.—Cat. No. 41684, U.S.N.M.

MOURLONIA Dekoninck. Genotype: Helix carinatus Sowerby.
Mourlonia Dekoninck, Ann. Mus. Royal Hist. Nat. Belg., 8, 1883, p. 75.—Koken, Neues Jahrb. f. Min. Geol. Pal., 6, Beilage-Band, 1889, p. 328.—Burckhardt, ibid., 1, 1897, p. 200, 201.

Mourlonia racinensis (Whitfield).
Pleurotomaria Racinensis Whitfield, Ann. Rep. for 1877, Wisconsin Geol. Surv., 1878, p. 84; Geol. Wisconsin, 4, 1882, p. 296, pl. 18, figs. 7, 8.
Niagaran (Racine): Racine, Wisconsin.

Mourlonia worthenana (Miller).
Murchisonia worthenana Miller, Jour. Cincinnati Soc. Nat. Hist., 5, 1882, p. 225, pl. 9, fig. 3.
Mourlonia worthenana Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 955 (gen. ref.).
Niagaran (Racine): Bridgeport, Chicago, Illinois.

Murchisonia of authors. See Cœlocaulus Œhlert, Ectomaria Koken, Fusispira Hall, Hormotoma Salter, Lophospira Whitfield and Omospira Ulrich.

MURCHISONIA D'Archiac and Verneuil.

Genotype: M. bilineata D'Archiac and Verneuil.

Murchisonia D'Archiac and Verneuil, Bull. Geol. Soc. France, 12, 1841, p. 154.

Observation.—The numerous citations of American authors to this genus are omitted here because probably none of them refers to species congeneric with the type. Murchisonia like Pleurotomaria may not be represented in American Paleozoic strata, both genera being used as provisional places for species insufficiently described. See Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 959, for discussion of this subject.

MURCHISONIA ABBREVIATA Hall. See Lophospira subabbreviata.

Murchisonia aciculata Hall.

Murchisonia aciculata Hall, Canadian Nat. Geol., 5, 1860, p. 154.—Dawson, Acadian Geol., 2d ed., 1868, p. 605.

Silurian: Arisaig, Nova Scotia.

MURCHISONIA ACREA Billings. See Turritoma acrea.

MURCHISONIA ACUMINATA Miller. See Lophospira acuminata.

MURCHISONIA ADA Billings. See Turritoma ada.

MURCHISONIA ADELINA Billings. See Ectomaria adelina.

MURCHISONIA AGILIS Billings. See Hormotoma? agilis.

MURCHISONIA ALEXANDRA Billings. See Omospira alexandra.

MURCHISONIA AMPLA Miller. See Lophospira ampla

MURCHISONIA ANGUSTATA Hall. See Hormotoma gracilis angustata.

MURCHISONIA ANNA Billings. See Hormotoma anna.

MURCHISONIA ARACHNE Billings. See Lophospira? arachne.

Murchisonia arisaigensis Hall.

Murchisonia Arisaigensis Hall, Canadian Nat. Geol., 5, 1860, p. 154.—Dawson, Acadian Geol., 2d ed., 1868, p. 604.

Silurian: Arisaig, Nova Scotia.

MURCHISONIA ARTEMESIA Billings. See Hormotoma artemesia.

MURCHISONIA ASPER Billings. See Lophospira aspera.

MURCHISONIA AUGUSTINA Billings. See Lophospira augustina.

Murchisonia (Hormotoma) augustina ottawaensis Ami.

Murchisonia (Hormotoma) Augustina var. Ottawaensis n. var. Ami, Geol. Surv. Canada, Ann. Rep., n. s., 12, App. G, 1901, p. 68 (nom. nud.).

Trenton: Ottawa, Ontario.

MURCHISONIA BELLICINCTA Hall. See Hormotoma bellicincta and H. trentonensis.

MURCHISONIA BELLICINCTA Owen. See Hormotoma major.

MURCHISONIA BELLICINCTA var. TERETIFORMIS Whiteaves. See Hormotoma teretiformis.

MURCHISONIA BICINCTA Hall. See Lophospira bicincta.

MURCHISONIA BICINCTA of authors. See Lophospira obliqua and L. perforata.

MURCHISONIA BICINCTA var. PERANGULATA Salter. See Lophospira perangulata.

Murchisonia?? billingsana Miller.

Murchisonia Hercyna Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 158, fig. 141 (adv. sheets, 1862).—Hall, 20th Rep. New York State Cab. Nat. Hist., 1868, p. 345; rev. ed., 1870, p. 397 (extras, 1865).—Nicholson, Rep. Pal. Prov. Ontario, pt. 2, 1875, p. 71, pl. 3, fig. 2; Quart. Jour. Geol. Soc. London, 31, 1875, p. 547, pl. 26, fig. 2.

Pleurotomaria hercyna Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 2, 1895, p. 76.

Murchisonia billingsana Miller, N. A. Geol. Pal., 1889, p. 411 (M. hercyna, Billings preoccupied).—Whiteaves, Geol. Surv. Canada, Pal. Foss., 3, pt. 4, 1906, p. 335.

Niagaran (Guelph): Galt, etc., Ontario; Wisconsin.

MURCHISONIA BIVITTATA Hall. See Cœlocaulus bivittatus.

MURCHISONIA BOWDENI Safford. See Lophospira bowdeni.

MURCHISONIA BOYDII Hall. See Loxonema boydi.

MURCHISONIA BOYLEI Nicholson. See Turritoma boylei.

MURCHISONIA CALCIFERA Miller. See Lophospira calcifera.

MURCHISONIA CARINATA James. See Pleurotomaria carinata.

Murchisonia?? carinifera Shumard.

Murchisonia carinifera Shumard, Trans. Acad. Sci. St. Louis, 2, 1863, p. 106.—Keyes, Missouri Geol. Surv., 5, 1894, p. 145.

Canadian (Yellville): Ozark County, Missouri.

MURCHISONIA CASSANDRA Billings. See Seelya cassandra.

MURCHISONIA CASSINA Miller. See Eotomaria? cassina.

MURCHISONIA CASSINA Whitfield. See Hormotoma? cassina.

Murchisonia?? catharina Billings.

Murchisonia Catharina Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 231, fig. 215.

Chazyan (Quebec—K): Table Head, Newfoundland.

MURCHISONIA CENTRALIS Miller. See Lophospira centralis.

MURCHISONIA CHAMBERLINI Whitfield. See Lophospira? chamberlini.

MURCHISONIA CICELIA Billings. See Lophospira cicelia.

MURCHISONIA? CONFUSA Whitfield. See Hormotoma confusa.

MURCHISONIA CONOIDEA of authors. See Holopea conoidea and Lophospira conoidea.

MURCHISONIA CONRADI Hall. See Lophospira conradi.

MURCHISONIA CONSTRICTA Whiteaves. See Turritoma constricta.

MURCHISONIA CENTRALIS Miller. See Lophospira centralis.

MURCHISONIA DECURTA Hall. See Lophospira subabbreviata.

MURCHISONIA ELEVATA Miller. See Lophospira elevata.

MURCHISONIA ESTELLA Billings. See Cœlocaulus estella.

MURCHISONIA EXTENUATA Hall. See Ectomaria extenuata.

MURCHISONIA FUNATA Billings. See Hormotoma funata.

MURCHISONIA GIGANTEA Billings. See Hormotoma gigantea.

MURCHISONIA GRACILENS Whitfield. See Hormotoma gracilens.

MURCHISONIA GRACILIS Hall. See Hormotoma gracilis.

MURCHISONIA (HORMOTOMA) GRACILIS Salter. See Hormotoma salteri canadensis.

MURCHISONIA HAMMELLI Miller. See Lophospira hammelli.

MURCHISONIA HELICTERES Salter. See Lophospira helicteres.

MURCHISONIA HELICTERES (part) Whitfield. See Lophospira serrulata.

MURCHISONIA HERCYNA Billings. See Murchisonia?? billingsana.

MURCHISONIA? HERMIONE Billings. See Lophospira? hermione.

MURCHISONIA HESPELERENSIS Whiteaves. See Lophospira hespelerensis.

MURCHISONIA HUMILIS Miller. See Lophospira humilis.

MURCHISONIA HYALE Billings. See Plethospira hyale.

MURCHISONIA INFREQUENS Billings. See Hormotoma infrequens.

MURCHISONIA JESSICA Billings. See Lophospira jessica.

MURCHISONIA LAPHAMI Hall. See Turritoma laphami.

Murchisonia? latifasciata Etheridge.
Murchisonia latifasciata Etheridge, Quart. Jour. Geol. Soc. London, 34, 1878, p. 600, pl. 27, fig. 1.
Niagaran: Offley Island, Arctic America.

MURCHISONIA LINEARIS Billings. See Cœlocaulus linearis.

MURCHISONIA LIRATA Miller. See Lophospira (?Seelya) lirata.

MURCHISONIA LOGANI Hall. See Cœlocaulus macrospirus.

MURCHISONIA LONGISPIRA Hall. See Cœlocaulus longispirus.

MURCHISONIA MACROSPIRA Hall. See Cœlocaulus macrospirus.

MURCHISONIA MAJOR Hall. See Hormotoma? major.

MURCHISONIA MAJOR Whitfield. See Hormotoma trentonensis.

MURCHISONIA MEDIALIS Miller. See Lophospira medialis.

MURCHISONIA MELANIAFORMIS Shumard. See Hormotoma melaniaformis.

MURCHISONIA MILLERI of authors. See Lophospira bicincta.

MURCHISONIA MINUTA Hall. See Ectomaria minuta.

MURCHISONIA MISSISQUOI Billings. See Ectomaria missisquoi.

MURCHISONIA MODESTA Billings. See Lophospira modesta.

Murchisonia?? mohawkensis Cleland.
Murchisonia mohawkensis Cleland, Bull. Amer. Pal., 3, 1900, p. 126 (254), pl. 15, fig. 13; ibid., 4, 1903, p. 18.
Canadian (Tribes Hill): Near Fort Hunter, etc., New York.

Murchisonia multigruma Miller. See Lophospira tropidophora.

Murchisonia multivolvis Billings. See Hormotoma multivolvis.

Murchisonia Mylitta Billings. See Lophospira mylitta.

Murchisonia (Fusispira?) obelisca Whitfield. See Hormotoma obelisca.

Murchisonia obtusa Hall. See Cœlocaulus obtusus.

Murchisonia œhlerti Miller. See Cœlocaulus œhlerti.

Murchisonia oweni Miller. See Lophospira oweni.

Murchisonia?? ozarkensis Shumard.
Murchisonia ozarkensis Shumard, Trans. St. Louis Acad. Sci., 2, 1863, p. 106.
Canadian (Yellville): Ozark County, Missouri.

Murchisonia (Eunema?) pagoda Whitfield. See Ectomaria prisca.

Murchisonia papillosa Billings. See Lophospira? papillosa.

Murchisonia peracuta Miller. See Lophospira peracuta

Murchisonia perangulata Hall. See Lophospira perangulata.

Murchisonia perlamellosa Miller. See Lophospira perlamellosa.

Murchisonia petila Hall. See Cœlocaulus petilus.

Murchisonia?? placida Billings.
Murchisonia placida Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 235.
Canadian (Quebec—G): Cape Norman, Newfoundland.

Murchisonia?? prava Whitfield.
Murchisonia? prava Whitfield, Bull. Amer. Mus. Nat. Hist., 1, 1886, p. 316, pl. 24, fig. 22.—Seely, Vermont State Geol. Rep., 7, 1910, pl. 62, fig. 22.
Canadian (Beekmantown): Fort Cassin, Vermont.

Murchisonia Procris Billings. See Hormotoma procris.

Murchisonia?? putilla Sardeson.
Murchisonia putilla Sardeson, Bull. Minnesota Acad. Nat. Sci., 4, 1896, p. 98, pl. 5, figs. 5, 6; Jour. Geol., 11, 1903, p. 481, fig. 24.
Ozarkian (Oneota): Near Dresbach and at Stillwater, Minnesota; Blanchardsville, Wisconsin; near Rapidan, Minnesota (?Jordan).

Murchisonia quadrisulcata Miller. See Lophospira quadrisulcata.

Murchisonia rugosa Billings. See Loxonema rugosum.

Murchisonia saffordi Miller. See Lophospira saffordi.

Murchisonia serrulata Salter. See Lophospira serrulata

Murchisonia simulatrix Billings. See Hormotoma simulatrix.

Murchisonia soluta Whiteaves. See Loxoplocus solutus.

Murchisonia sororcula Billings. See Lophospira sororcula.

MURCHISONIA SPIRONEMA Miller. See Lophospira spironema.

MURCHISONIA SUBABBREVIATA D'Orbigny. See Lophospira subabbreviata.

MURCHISONIA SUBFUSIFORMIS Hall. See Fusispira subfusiformis.

MURCHISONIA SUBULATA Conrad. See Hormotoma subulata.

MURCHISONIA SUMNERENSIS Safford. See Lophospira sumnerensis.

Murchisonia?? sylvia Billings.
Murchisonia Sylvia Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 190.
Ozarkian? (Levis—erratics): Point Levis, Quebec.

MURCHISONIA? TEREBRALIS Hall. See Cœlocaulus terebralis.

MURCHISONIA TERETIFORMIS Billings. See Hormotoma teretiformis.

MURCHISONIA TEXTILIS Miller. See Schizolopha textilis.

MURCHISONIA TRICARINATA Hall. See Lophospira tricarinata and L. serrulata.

MURCHISONIA TROPIDOPHORA Whiteaves. See Loxoplocus solutus.

Murchisonia?? turricula Billings.
Murchisonia turricula Billings, Geol. Surv. Canada, Rep. Progr. for 1853–56, 1857, p. 301; Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 55 (loc. ref.).
Anticostian (Jupiter River): The Jumpers, Anticosti.

MURCHISONIA TURRITIFORMIS Hall. See Cœlocaulus turritiformis.

MURCHISONIA UNIANGULATA Hall. See Lophospira uniangulata.

MURCHISONIA UNIANGULATA var. ABBREVIATA Hall. See Lophospira abbreviata.

MURCHISONIA VARIANS Billings. See Lophospira varians.

Murchisonia?? varicosa Hall.
Murchisonia? varicosa Hall, Pal. New York, 1, 1847, p. 42, pl. 10, figs. 7a, b.
Pleurotomaria varicosa Emmons, Amer. Geology, 1, pt. 2, 1855, p. 161.
Black River (Lowville): Watertown, New York.

MURCHISONIA VENTRICOSA Hall. See Lophospira ventricosa.

MURCHISONIA VENTRICOSA Salter. See Omospira alexandra.

MURCHISONIA VENTRICOSA Whitfield. See Lophospira conradana.

MURCHISONIA VESTA BILLINGS. See Hormotoma vesta.

MURCHISONIA VITELLIA Billings. See Cœlocaulus vitellia.

MURCHISONIA VITTATA Hall. See Fusispira vittata.

MURCHISONIA WINNIPEGENSIS Miller. See Hormotoma winnipegensis.

MURCHISONIA WORTHENANA Miller. See Mourlonia worthenana.

MURCHISONIA XANTHIPPE Billings. See Lophospira xanthippe.

MYALINA MYTILIFORMIS Hall. See Mytilarca mytiliformis.

MYELODACTYLUS Hall. Genotype: M. convolutus Hall.

Myelodactylus Hall, Pal. New York, 2, 1852, p. 191.—Angelin, Icon. Crinoid. Suec., 1878, p. 11.—Zittel, Handb. Pal., 1, 1879, p. 354.—Wachsmuth and Springer, Proc. Acad. Nat. Sci. Philadelphia, 1879, p. 369 (Rev. Pal., pt. 1, p. 146).—Miller, Jour. Cincinnati Soc. Nat. Hist., 3, 1880, p. 142.—Nicholson and Etheridge, Mon. Sil. Foss. Girvan Dist., 1880, p. 330.—Miller, N. A. Geol. Pal., 1889, p. 262; 2d App., 1897, p. 749.—Weller, Bull. Chicago Acad. Sci., Nat. Hist. Surv., 4, pt. 1, 1900, p. 45, 68.—Wachsmuth, Zittel-Eastman Textb. Pal., 1, 1900, p. 153.

Herpetocrinus Salter, Cat. Camb. and Sil. Foss., 1873, p. 118.—Nicholson and Etheridge, Mon. Sil. Foss. Girvan Dist., 1880, p. 331.—Bather, Kongl. Sv. Vet. Akad. Handl., 25, No. 2, 1893, pp. 21, 36, pls. 1, 2, figs. 24–78; fig. 12; Amer. Geol., 16, 1895, p. 214; Nat. Sci., 12, 1898, p. 339; Treatise on Zool., pt. 3, Echinoderma, London, 1900, p. 146, fig. 49.—Zittel, Grundzuge Pal., 1, 1910, p. 151.—Springer, Zittel-Eastman Textb. Pal., 1, 1913, p. 212. (Genotype: H. fletcheri Salter).

Myelodactylus brachiatus Hall.

Myelodactylus brachiatus Hall, Pal. New York, 2, 1852, p. 232, pl. 45, figs. 7a–e.

Clinton (Rochester): Lockport, New York.

Myelodactylus bridgeportensis Miller.

Myelodactylus bridgeportensis Miller, Jour. Cincinnati Soc. Nat. Hist., 3, 1880, p. 141, pl. 4, figs. 2, 2a–c; N. A. Geol. Pal., 1889, p. 262, fig. 368.—Weller, Bull. Chicago Acad. Sci., Nat. Hist. Surv., 4, pt. 1, 1900, p. 69, pl. 15, figs. 1-2.

Niagaran (Racine): Bridgeport, Illinois.

Myelodactylus convolutus Hall.

Myelodactylus convolutus Hall, Pal. New York, 2, 1852, p. 193, pl. 42, figs. 5a, b; 6a–h.—Nicholson and Etheridge, Mon. Sil. Foss. Girvan Dist., 1880, p. 331.

Clinton (Rochester): Lockport, New York.

Myelodactylus gorbyi Miller.

Myelodactylus gorbyi Miller, 17th Ann. Rep. Indiana Dep. Geol. Nat. Res., 1892, p. 682, pl. 11, figs. 6, 7 (adv. sheets, 1891, p. 72); N. A. Geol. Pal., 2d. App., 1897, p. 749, fig. 1365.

Niagaran (Waldron): Near Nashville (Newsom), Tennessee.

MYRIANITES MacLeay. Genotype: M. macleaii Murchison.

Myrianites MacLeay, Murchison's Sil. Syst., p. 700; Ann. Nat. Hist., 4 1840, p. 387.—Richter, Zeits. d. d. geol. Gesell., 1, 1849, p. 457; ibid., 5, 1853, 450.—McCoy, British Pal. Rocks and Foss., 1854, p. 129.—Nicholson and Etheridge, Mon. Sil. Foss. Girvan Dist., 1880, p. 305.—Miller, N. A. Geol. Pal., 1889, p. 519.

Myrianites murchisoni Emmons.

Myrianites murchisoni Emmons, Nat. Hist. New York Agric., 1, 1846, p. 69, pl. 16, fig. 1.

Ordovician(?): Waterville, Maine.

Myrianites sillimani Emmons.

Myrianites sillimani Emmons, Nat. Hist. New York Agric., 1, 1846, p. 69, pl. 16, fig. 5.

Ordovician(?): Waterville, Maine.

MYTILARCA Hall. Genotype: Inoceramus chemungensis Conrad.

Mytilarca Hall, Prelim. Notice Lam., pt. 2, dec. 1869, p. 19; 23d Rep. New York State Cab. Nat. Hist., 1873, pl. 14, figs. 11–13.—Zittel, Handb. Pal., 2, 1881, p. 43.—Hall, Rep. State Geol. New York, 1884, p. 15; Pal. New York, 5, pt. 1, Lam. 1, 1884, p. 14; 35th Rep. New York State Mus. Nat. Hist., 1884, p. 406d.—Miller, N. A. Geol. Pal., 1889, p. 493.

Mytilarca acutirostra (Hall).

Ambonychia acutirostra Hall, 20th Rep. New York State Cab. Hist., 1868, (extras, 1865), pp. 336, 381, pl. 14 (5), fig. 2; p. 384; rev. ed., 1870, p. 383, pl. 14, fig. 2.—Meek and Worthen, Geol. Surv. Illinois, 3, p. 356, pl. 5, figs. 8a, b, 9c.—Hall, 28th Rep. New York State Mus. Nat. Hist., doc. ed., 1875, pl. 7, fig. 12; mus. ed., 1879, p. 171, pl. 7, fig. 12; 11th Ann. Rep. Indiana Dep. Geol. Nat. Hist., 1882, p. 314, pl. 27, figs. 28, 29.

Mytilarca acutirostrum Clarke and Ruedemann. Mem, New York State Mus., 5, 1903, p. 48, pl. 5, figs. 11, 12.

Niagaran: Wauwatosa, Wisconsin; Bridgeport, Illinois (Racine); Shelby, New York (Guelph); Waldron, Indiana (Waldron).

MYTILARCA EDULIFORMIS Clarke and Ruedemann. See Streptomytilus eduliformis.

Mytilarca foerstei Clarke and Ruedemann.

Mytilarca mytiliformis Foerste (not Hall), Geol. Surv. Ohio Pal., 7, 1893, p. 559, pl. 37, figs. 11a–c.

Mytilarca foerstei Clarke and Ruedemann, Mem. New York State Mus., 5, 1903, p. 49.

Upper Medinan (Brassfield): Todds Fork, near Wilmington, Ohio.

Mytilarca mytiliformis (Hall).

Myalina mytiliformis Hall, Pal. New York, 2, 1852, p. 100, pl. 30, figs. 1a, b, c, d.

Mytilarca mytiliformis Clarke and Ruedemann, Mem. New York State Mus., 5, 1903, p. 49 (gen. ref.).

Upper Clinton: Mohawk, New York.

MYTILARCA MYTILIFORMIS Foerste. See Mytilarca foerstei.

Mytilarca nitida (Billings).

Ambonychia nitida Billings, Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 50, pp. 17a–b.

Cleionychia? nitida Ulrich, Amer. Geol., 10, 1892, p. 97 (gen. ref.).

Anticostian (Jupiter River): Near Jupiter River, Anticosti.

Mytilarca obliqua Weller.

Mytilarca obliqua Weller, Geol. Surv. New Jersey Pal., 3, 1903, p. 245, pl. 22, fig. 8.

Helderbergian (Decker Ferry): Two miles south of Tristates, New York.

MYTILARCA PERNOIDES Whiteaves. See Streptomytilus pernoides.

Mytilarca sigilla Hall.

Mytilarca sigilla Hall, 28th Rep. New York State Mus. Nat. Hist., 1875, doc. ed., (1877), pl. 27, fig. 10; mus. ed., 1879, p. 174, pl. 27, fig. 10; 11th Ann. Rep. Indiana Dep. Geol. Nat. Hist., 1882, p. 316, pl. 28, fig. 10.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 473, fig.

Niagaran (Waldron): Waldron, Indiana.

NANNO Clarke. Genotype: N. aulema Clarke.

Nanno Clarke, Amer. Geol., 14, 1894, pp. 205-208.—Bather, Nat. Sci., 5, 1894, p. 429.—Clarke, Amer. Geol., 15, 1895, p. 128.—Holm, Geol. Foren. Stockholm Forhandl., 18, 1896, p. 402; Sveriges Geol. Unders., Ser. C, No. 163, 1896, p. 11.—Clarke, Geol. Minnesota, 3, pt. 2, 1897, p. 769.—Hyatt, Zittel-Eastman Textb. Pal., 1, 1900, p. 515.—Ruedemann, Bull. New York State Mus., 80, 1904, p. 322; ibid., 90, 1906, p. 427.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 44.—Hyatt, Zittel-Eastman Textb. Pal., 2d ed., 1913, p. 596.

Nanno aulema Clarke.

Nanno aulema Clarke, Amer. Geol., 15, 1894, p. 207, pl. 6, figs. 1-8.—Bather, Nat. Sci., 5, 1894, p. 430, fig. 3.—Hyatt, Amer. Geol., 16, 1895, pp. 1-11, pl. 1, figs. 1-4.—Clarke, Geol. Minnesota, 3, pt. 2, 1897, p. 770, pl. 47, figs. 4-11.—Ruedemann, Amer. Geol., 31, 1903, p. 213.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 45, fig. 1242.

Endoceras aulema Miller, N. A. Geol. Pal., 2d App., 1897, p. 773 (gen. ref.).

Black River (Decorah): Minneapolis and Chatfield, Minnesota.

Cotypes.—Cat. No. 48198, U.S.N.M.

Nanno kingstonensis Whiteaves.

Nanno kingstonensis Whiteaves, Amer. Geol., 35, 1905, p. 27, pl. 3.

Stones River (Pamelia): Near Kingston, Ontario.

Nanno noveboracum Ruedemann.

Nanno noveboracum Ruedemann, Bull. New York State Mus., 90, 1906, p. 427, pl. 9, figs. 6, 7.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 45.

Chazyan (Valcour): Near Chazy, New York.

Nanno primævus Whiteaves.

Nanno primævus Whiteaves, Amer. Geol., 35, 1905, p. 26, pl. 2, figs. 3, 3a.

Canadian (Beekmantown): Marlborough, Ontario.

NARTHECOCERAS Hyatt. Genotype: Endoceras crassisiphonatum Whiteaves.

Narthecoceras Hyatt, Amer. Geol., 16, 1895, p. 2, footnote; Zittel-Eastman Textb. Pal., 1, 1900, p. 515; ibid., 2d ed., 1913, p. 596.

Narthecoceras crassisiphonatum (Whiteaves).

Endoceras crassisiphonatum Whiteaves, Trans. Royal Soc. Canada, 9, sec. 4, 1892, p. 79, pl. 6, figs. 1-4; pl. 7, fig. 1.—Ruedemann, Bull. New York State Mus., 80, 1905, p. 300, fig. 1.

Endoceras (Narthecoceras) crassisiphonatum Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 3, 1897, p. 204.

Narthecoceras crassisiphonatum Whiteaves, Geol. Surv. Canada, Pal. Foss., 3, pt. 4, 1906, p. 344 (gen. ref.).

Narthecoceras (Endoceras) crassisiphonatum Hyatt, Amer. Geol., 14, 1895, p. 3.

Black River or Richmond: Lower Fort Garry and East Selkirk, Manitoba.

Narthecoceras simpsoni (Billings).

Orthoceras simpsoni Billings in Hind, Narrative Canadian Red River Expl. Expd. of 1857 and Assinniboine and Saskatchewan Exped. of 1858, 2, 1860, p. 287, fig.—Whiteaves, Trans. Royal Soc. Canada, 9, sec. 4, 1892, p. 80, pl. 7, figs. 2, 3a, 3; pl. 8, fig. 1.

Narthecoceras (Endoceras) simpsoni Hyatt, Amer. Geol., 16, 1895, p. 3 (gen. ref.).

Endoceras (Narthecoceras) Simpsoni Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 3, 1897, p. 205.

Narthecoceras Simpsoni Whiteaves, Geol. Surv. Canada, Pal. Foss., 3, pt. 4, 1906, p. 344 (gen. ref.).

Black River or Richmond: Cat Head, etc., Lake Winnipeg, Manitoba.

NAUTILUS Breynius. Genotype: N. pompilius Linnæus.

Nautilus Breynius, Dissert Polyth., 1732, p. 11.—Linnæus, Syst. Nat., ed. 10, 1758, p. 709.—Hyatt, Proc. Boston Soc. Nat. Hist., 22, 1883, p. 301; Proc. Amer. Phil. Soc., 32, 1894, p. 559.—Foord, Cat. Foss. Ceph. British Mus., 2, 1891, p. 179.—Zittel, Handb. Pal., 2, 1881, p. 382.—Hyatt, Zittel-Eastman Textb. Pal., 2d ed., 1913, p. 607.

Nautilus?? avus Barrande.

Nautilis avus Barrande, Syst. Sil. du Boheme, 4, 1870, pl. 435, fig. 5.
Lower Ordovician: Newfoundland.

NAUTILUS CALCIFERUS Billings. See Tarphyceras calciferum.

Nautilus?? cancellatus McChesney.

Cyrtoceras giganteum McChesney, Desc. New Species Fossils, 1860, p. 67.
Lituites cancellatum McChesney, Desc. New Fossils, 1861, p. 96 (name proposed for Cyrtoceras giganteum preoccupied); Plates Illust. New Species Fossils, 1865, pl. 7, fig. 8; Trans. Chicago Acad. Sci., 1, 1868, p. 51, pl. 7, fig. 8.
Lituites occidentalis Hall, Rep. Progr. Geol. Surv. Wisconsin, 1861.
Nautilus occidentalis Hall, 20th Rep. New York State Cab. Nat. Hist., 1868, p. 363; rev. ed., 1870, p. 400.
Niagaran (Racine): Joliet, Illinois.

Nautilus?? capax (Hall).

Lituites capax Hall, Rep. Progress Geol. Surv. Wisconsin, 1860, p. 3.
Nautilus capax Hall, 20th Rep. New York State Cab. Nat. Hist., 1868, p. 363; rev. ed., 1870, p. 400.
Niagaran (Racine): Waukesha and Racine, Wisconsin.

NAUTILUS? CHAMPLAINENSIS Whitfield. See Tarphyceras champlainense.

Nautilus?? desertus Billings.

Nautilus desertus Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 258.
Chazyan (Quebec—L): Point Rich, Newfoundland.

Nautilus?? ferox Billings.

Nautilus ferox Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 351.
Canadian (Romaine): Mingan Islands, Canada.

NAUTILUS HERCULES Billings. See Litoceras hercules.

NAUTILUS INSOLENS Billings. See Litoceras insolens.

NAUTILUS JASON Billings. See Plectoceras jason.

NAUTILUS KELLOGGI Whitfield. See Eurystomites kelloggi and E. rotundus.

NAUTILUS NATATOR Billings. See Barrandeoceras natator.

NAUTILUS OCCIDENTALIS Hall. See Nautilus?? cancellatum.

Nautilus?? oceanus Hall.

Nautilus Oceanus Hall, 11th Ann. Rep. Indiana Dep. Geol. Nat. Hist., 1882, p. 325; Trans. Albany Inst., 10, 1883, p. 75.
Niagaran (Waldron): Waldron, Indiana.

NAUTILUS PERKINSI Whitfield. See Tarphyceras perkinsi.

Nautilus?? pomponius Billings.

Nautilus Pomponius Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 26 (adv. sheets, 1862).
Canadian (Beekmantown): Phillipsburg, Quebec.

NAUTILUS TYRANS Billings. See Plectoceras tyrans.

NAUTILUS VERSUTUS Billings. See Litoceras versutum.

Nebulipora McCoy. Genotype: N. papillata McCoy.

Nebulipora McCoy, Ann. Mag. Nat. Hist., 2d ser., 6, 1850, p. 282; British Pal. Foss., 1852, p. 22; Cont. British Pal., 1854, p. 168.—Salter, Cat. Camb. Sil. Foss., 1873, p. 108.—Ulrich, Jour. Cincinnati Soc. Nat. Hist., 5 1882, p. 155.—Miller, N. A. Geol. Pal., 1889, p. 198.

Observation.—Nothing has been added to McCoy's original descriptions. The genus, apparently monticuliporoid in its structure, not having been characterized with the precision necessary for modern purposes, has not been used by recent writers.

Nelimenia Castelnau. Genotype: N. incognita Castelnau.

Nelimenia Castelnau, Essai Syst. Sil. l'Amerique Septent., 1843, p. 33.

Observation.—Not recognized. Based probably upon a fragment of Phragmoceras or Oncoceras.

Nelimenia incognita Castelnau. Not recognized.

Nelimenia incognita Castelnau, Essai Syst. Sil. l'Amerique Septent., 1843, p. 33, pl. 10, fig. 4.

Ordovician: Falls of Montmorency River, Canada.

Observation.—Probably the same as Oncoceras constrictum Hall.

NEMAGRAPSUS CAPILLARIS Emmons. See Thamnograptus capillaris.

NEMAGRAPSUS ELEGANS Emmons. See Nemagraptus gracilis.

NEMAGRAPTUS Emmons. Genotype: N. elegans Emmons.

Nemagrapsus Emmons, Amer. Geology, 1, pt 2, 1855, p. 109.

Nemagraptus Hall, Pal. New York, 3, 1859, p. 511, footnote; 13th Rep. New York State Cab. Nat. Hist., 1860, p. 56, footnote.—Zittel, Handb. Pal., 1, 1879, p. 298.—Miller, N. A. Geol. Pal., 1889, p. 198.—Wiman, Bull. Geol. Inst. Univ. Upsala, 2, pt. 2, 1896, p. 266.—Elles and Wood, Mon. British Grapt., Pal. Soc., 1903, pp. xxxviii, 125.—Ruedemann, Mem. New York State Mus., 11, pt. 2, 1908, p. 274; Zittel-Eastman Textb. Pal., 2d ed., 1913, p. 130.

Cœnograptus Hall, 20th Rep. New York State Cab. Nat. Hist., 1868, footnote, p. 179, pp. 217, 236; rev. ed., 1870, p. 251.—Nicholson, Mon. British Grapt., 1872, p. 112.—Zittel, Handb. Pal., 1, 1879, p. 298.—Tullberg, Sveriges Geol. Unders., sec. C, No. 55, 1883, p. 12.—Miller, N. A. Geol. Pal., 1st App., 1892, p. 668.—Wiman, Bull. Geol. Inst. Univ. Upsala, 2, pt. 2, 1896, p. 266—Koken, Die Leitfossilien, Leipzig, 1896, p. 328.—Walther, Zeits d. d. geol. Gesell., 49, 1897, p. 251.—Roemer and Frech, Leth. geog., 1 Theil, Leth. Pal., 1, 3 Lief., 1897, p. 584.—Grabau and Shimer, N. A. Index Fossils, 1, 1906, p. 28. (Genotype: Graptolithus gracilis Hall.)

Helicograpsus Nicholson, Ann. Mag. Nat. Hist., 4th ser., 2, 1868, p. 23. (Genotype: G. gracilis Hall.)

Stephanograptus Geinitz, Neues Jahrb. Min., etc., 1866, p. 124. (Genotype: G. gracilis Hall.)

Nemagraptus exilis (Lapworth).

Cœnograptus exilis Lapworth, MS. Rep., 1890.

Stephanograptus exilis (Lapworth) Gurley, Jour. Geol., 4, 1896, p. 68, 101.

Nemagraptus exilis Ruedemann, Mem. New York State Mus., 11, pt. 2, 1908, pp. 287-290, pl. 17, figs. 3, 5, 8, 9, figs. 202, 203.

Chazyan (Normanskill): Glenmont and Stockport, New York.

Plesiotypes.—Cat. No. 54250, U.S.N.M.

Nemagraptus exilis linearis Ruedemann.

Nemagraptus exilis var. linearis Ruedemann, Mem. New York State Mus., 11, pt. 2, 1908, pp. 290, 291, pl. 17, figs. 10–12, figs. 204, 205.

Chazyan (Normanskill): Speigletown, Stockport, Kenwood, etc., New York.

Nemagraptus gracilis (Hall).

Graptolithus gracilis Hall, Pal. New York, 1, 1847, p. 274, pl. 74, figs. 6a–d; 12th Ann. Rep. New York State Cab. Nat. Hist., 1859, p. 58, fig. 10; Pal. New York, 3, 1859, p. 510, figs. 1–5; pl. 512, fig. 6; p. 513, fig. 7; 13th Ann. Rep. New York State Cab. Nat. Hist., 1860, p. 56, figs. 6, 7; Geol. Surv. Canada, dec. 2, 1865, pp. 13, 14, figs. 16–18.—Bailey, Mem. Geol. Surv. Ireland, sheet 133, 1866, p. 12, fig. 3; Dublin Quart. Jour. Sci., 2, 1862, p. 316, pl. 22; figs. 5a–c.—Walcott, Trans. Albany Inst., 10, 1883 (adv. sheets, 1879), p. 35.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 265, figs.

Stephanograptus gracilis Geinitz, Neues Jahrb. Min., etc., 1866, p. 124.—Walcott, Bull. Geol. Soc. Amer., 1, 1890, p. 338.

Helicograpsus (Graptolithus) gracilis Nicholson, Ann. Mag. Nat. Hist., 4th ser., 1, 1868, p. 56, pl. 3, fig. 15.

Helicograptus gracilis Dodge, Amer. Jour. Sci., 3d ser., 40, 1890, p. 153.

Cladograpsus gracilis Carruthers, Geol. Mag., 5, 1868, p. 130.

Cœnograptus gracilis Hall, New York State Cab. Nat. Hist., 20th Ann. Rep., 1868, pp. 179, 180, figs. 13–19; p. 226; rev. ed., p. 211, figs. 17–19.—Lapworth, Cat. West. Scott. Foss., 1876, p. 5, pl. 3, fig. 65; Belfast Nat. Field Club, Rep. and Proc., App., 1877, p. 142, pl. 7, fig. 11.—Zittel, Handb. Pal., 1, Munich, 1879, p. 293, fig. 198; p. 298, fig. 203.—Tullberg, Sver. Geol. Unders., ser. C, No. 50, 1882, p. 20.—Herrmann, Nyt. Mag. f. Naturvidensk, 27, 1885, p. 359, pl. 2, fig. 21.—Lapworth, Roy. Soc. Canada, Proc. and Trans., 4, 1887, p. 178f, p. 169.—Gurley, Geol. Surv. Ark. Ann. Rep., 3, 1892, p. 408.—Roemer and Frech, Leth. Geog., 1 Theil, Leth. Pal., 1, 1897, p. 584, fig. 155.—Hall, Geol. Mag., n. s., dec. 4, 6, 1899, p. 445.—Ruedemann, Bull. New York State Mus., 42, 1901, p. 528; ibid., 52, 1902, p. 583, fig. 13.—Clark, Geol. Mag., 4th ser. 9, 1902, p. 498.—Weller, Geol. Surv. New Jersey, Pal., 3, 1902, p. 53; ibid., 1903, p. 214, pl. 16, fig. 19.—Grabau and Shimer, N. A. Index Fossils, 1, 1906, p. 28, fig. 40.

Cœnograptus (Helicograptus) gracilis Nicholson, Monog. British Grapt., 1872, p. 45, fig. 14; p. 113, fig. 55; p. 66, fig. 35.

Monograptus gracilis Whitfield, Amer. Jour. Sci., 3d ser., 26, 1883, p. 380.

Nemagraptus gracilis Elles and Wood, Monogr. British Grapt., pt. 3, 1903, p. 127, pl. 19, figs. 1a–f; fig. 76a, b.—Ruedemann, Mem. New York State Mus., 11, pt. 2, 1908, pp. 277–282, pl. 16, figs. 1–4, 9; figs. 191, p. 276; 192–195, p. 279.

Rastrites barrandi Harkness, Geol. Soc. Quart. Jour., 11, 1855, p. 475.

Nemagraptus elegans Emmons, Amer. Geology, 1, pt. 2, 1856, p. 109, pl. 1, fig. 6.

Chazyan (Normanskill): Kenwood, Glenmont, Stockport, etc., New York; New Jersey; Maine; Canada; Tennessee; Arkansas.

Ordovician: Wales, Sweden, Scotland (Glenkill); Australia.

Nemagraptus gracilis approximatus Ruedemann.

Nemagraptus gracilis var. approximatus Ruedemann, Mem. New York State Mus., 11, pt. 2, 1908, p. 287, pl. 16, figs. 5, 6.

Chazyan (Normanskill): Kenwood and Glenmont, New York.

Nemagraptus gracilis crassicaulis (Gurley).

Stephanograptus crassicaulis Gurley, Jour. Geol., 4, 1896, p. 68.

Nemagraptus gracilis var. crassicaulis Ruedemann, Mem. New York State Mus., 11, pt. 2, 1908, pp. 285, 286, fig. 199.

Chazyan (Normanskill): Stockport, New York.

Nemagraptus gracilis distans Ruedemann.

Nemagraptus gracilis var. distans Ruedemann, Mem. New York State Mus., 11, pt. 2, 1908, p. 286, pl. 16, figs. 7, 8; figs. 200, 201.

Chazyan (Normanskill): Glenmont, New York.

Nemagraptus gracilis surcularis (Hall).

Graptolithus gracilis (part) Hall, 13th Ann. Rep. New York State Cab. Nat. Hist., 1860, p. 56, figs. 1–4; Can. Org. Rem., Geol. Surv. Canada, dec. 2, 1865, p. 13, figs. 12–15.

Cœnograptus surcularis Hall, 20th Ann. Rep. New York State Cab. Nat. Hist., 1868, p. 179, figs. 13–16; ibid., rev. ed., 1870, p. 211, figs. 13–16.—Lapworth, Cat. West. Scott. Foss., 1876, pl. 3, fig. 64; Rep. and Proc. Belfast Nat. Field Club, 1877, p. 143, pl. 7, fig. 12.

Stephanograptus surcularis Walcott, Bull. Geol. Soc. Amer., 10, 1890, p. 338.

Nemagraptus gracilis var. surcularis Elles and Wood, Monogr. British Grapt., pt. 3, 1903, p. 129, pl. 19, figs. 2a–d; fig. 77a–c.—Ruedemann, Mem. New York State Mus., 11, pt. 2, 1908, pp. 282–285, pl. 17, figs. 1, 2; figs. 196, 197.

Chazyan (Normanskill): Kenwood, Stockport, and Glenmont, New York; Alabama; Great Britain.

Plesiotype.—Cat. No. 54263, U.S.N.M.

NEMAPODIA Emmons. Genotype: N. tenuissima Emmons.

Nemapodia Emmons, Nat. Hist. New York, Agric., 1, 1846, p. 68.—Hall, Pal. New York, 1, 1847, p. 319; Proc. Amer. Assoc. Adv. Sci., 2, 1850, p. 258.—Miller, N. A. Geol. Pal., 1889, p. 519.

Nemapodia tenuissima Emmons.

Nemapodia tenuissima Emmons, Nat. Hist. New York, Agric., 1, 1846, p. 68, pl. 14, fig. 1.—Hall, Pal. New York, 2, 1852, p. 32, footnote.—Geinitz, Neues Jahrb. Min., etc., 1861, p. 66.

Cambrian or Ordovician: Salem, Washington County, New York.

NEMATOPHYCUS Carruthers. Genotype: Prototaxites logani Dawson.

Nematophycus Carruthers, Micr. Jour. London, 8, 1872, p. 160.—Roemer, Leth. geog., 1 Theil., Leth. Pal., Erste Lief, 1880, p. 124.—Grabau, Bull. New York State Mus., 9, 1901, p. 132; Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 132.

Nematophycus crassus (Penhallow).

Nematophyton crassum Penhallow, Trans. Royal Soc. Canada, 7, sec. 4, 1889, p. 23, pl. 1, figs. 2?, 3?, 5, 6; Proc. U. S. Nat. Mus., 16, 1893, p. 115, pl. 16, fig. 3; Canadian Rec. Sci., 7, 1896, p. 156, pl. 2, figs.; p. 155.—Grabau, Bull. Geol. Soc. America, 11, 1900, p. 363.

Nematophycus crassus Grabau, Bull. New York State Mus., 45, 1901, p. 132; Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 132.

Devonian: Gaspe and New York.

Silurian (Akron): Buffalo, New York.

NEMATOPHYTON CRASSUM Penhallow. See Nematophycus crassus.

NEMATOPORA Ulrich. Genotype: N. ovalis Ulrich.

Nematopora Ulrich, Amer. Geol., 1, 1888, p. 234.—Miller, N. A. Geol. Pal., 1889, p. 313.—Ulrich, Geol. Surv. Illinois, 8, 1890, pp. 401, 644.—Pocta, Syst. Sil. Centre Boheme, 8, pt. 1, 1894, p. 17.—Simpson, 14th Ann. Rep. State Geol. New York for 1894, 1897, p. 553.—Ulrich, Zittel's Textb. Pal. (Engl. ed.), 1896, p. 281.—Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 43.—Bassler, Bull. U. S. Geol. Surv., 292, 1906, p. 58.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 153.—Bassler, Bull. U. S. Nat. Mus., 77, 1911, p. 155. Zittel-Eastman Textb. Pal., 1913, p. 343.

Nematopora alternata Ulrich.
Nematopora alternata Ulrich, Geol. Surv. Illinois, 8, 1890, p. 646, pl. 29, figs. 8, 8a.—Savage, Bull. Geol. Surv. Illinois, 23, 1913, p. 43, pl. 1, fig. 6.
Upper Medinan (Girardeau): Alexander County, Illinois.

Nematopora conferta Ulrich.
Nematopora conferta Ulrich, Jour. Cincinnati Soc. Nat. Hist., 12, 1890, p. 198, fig. 22; Geol. Minnesota, 3, 1893, p. 206, pl. 3, figs. 21-23.—Bassler, Zittel-Eastman Textb. Pal., 1913, p. 343, fig. 501c.
Trenton (Prosser): Cannon Falls, Minnesota.
Holotype.—Cat. No. 43687, U.S.N.M.

Nematopora consueta Bassler.
Nematopora delicatula Ulrich (not Ulrich, 1890), Geol. Minnesota, 3, 1893, p. 206, pl. 3, figs. 26, 27.
Nematopora consueta Bassler, Bull. U. S. Nat. Mus., 77, 1911, pp. 155, 156, fig. 76.
Trenton (Prosser): Near Cannon Falls, Minnesota.
Middle Ordovician (Kuckers): Near Jewe, Esthonia, Russia.
Cotypes.—Cat. No. 44100, U.S.N.M.

Nematopora delicatula Ulrich.
Nematopora delicatula Ulrich (not Ulrich, 1893), Geol. Surv. Illinois, 8, 1890, p. 646, pl. 29, figs. 11, 11b.—Simpson, 14th Ann. Rep. State Geol. New York for 1894, 1897, p. 553, figs. 124, 125.—Bassler, Bull. U. S. Nat. Mus., 77, 1911, p. 155, fig. 76a, b.—Savage, Bull. Geol. Surv. Illinois, 23, 1913. p. 43, pl. 1, fig. 4.
Upper Medinan (Girardeau): Alexander County, Illinois.

NEMATOPORA DELICATULA Ulrich (1893). See Nematopora consueta.

NEMATOPORA FORMOSA Billings. See Helopora formosa.

Nematopora fragilis Ulrich.
Nematopora fragilis Ulrich, Geol. Surv. Illinois, 8, 1890, p. 646, pl. 29, figs. 10-10c.—Bassler, Bull. U. S. Nat. Mus., 77, 1911, pp. 157, 158, fig. 78.—Savage, Bull. State Geol. Surv. Illinois, 23, 1913, p. 44, pl. 1, fig. 3.
Upper Medinan (Girardeau): Alexander County, Illinois.
Silurian (Lyckholm): Island of Dago, Baltic Sea.

Nematopora granosa Ulrich.
Nematopora granosa Ulrich, Jour. Cincinnati Soc. Nat. Hist., 12, 1890, p. 196, fig. 20; Geol. Minnesota, 3, 1893, p. 205, pl. 3, figs. 17-20.
Trenton (Prosser): Cannon Falls, Minnesota.
Cotypes.—Cat. No. 43688, U.S.N.M.

Nematopora lineata (Billings).
Helopora lineata Billings, Cat. Sil. Foss. Anticosti, 1866, p. 36.
Nematopora lineata Ulrich, Geol. Surv. Illinois, 8, 1890, p. 646, pl. 29, figs. 7-7e.—Bassler, Bull. U. S. Nat. Mus., 77, 1911, pp. 158, 159, fig. 79.
Richmond (Charleton) and Gamachian (Ellis Bay): Junction Cliff, etc., Anticosti.
Early Silurian (Borkholm): Borkholm, Esthonia.
Plesiotypes.—Cat. No. 43384, U.S.N.M.

NEMATOPORA? LINEOPORA Ulrich. See Helopora lineopora.

Nematopora macropora (Hall).
Trematopora? (Trachypora?) macropora Hall, Trans. Albany Inst., 10, 1883, p. 60 (abstract, 1879, p. 4); 11th Ann. Rep. Indiana Geol. Nat. Hist., 1882, p. 236.
Niagaran (Waldron): Waldron, Indiana.

Nematopora minuta (Hall).

Trematopora? (Trachypora?) minuta Hall, 28th Ann. Rep. New York State Mus. (doc. ed.), 1876, pl. 11, fig. 8.

Trematopora minuta Hall, 28th Ann. Rep. New York State Mus. (mus. ed.), 1879, p. 113, pl. 11, fig. 8; 11th Ann. Rep. Indiana Geol. Nat. Hist., 1882, p. 234, pl. 10, fig. 8.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1201, fig.

Nematopora minuta Ulrich, Geol. Surv. Illinois, 8, 1890, p. 645.—Bassler, Bull. U. S. Geol. Surv., 292, 1906, pp. 58, 59, pl. 18, fig. 10; pl. 21, figs. 8-11.

Niagaran: Waldron, Indiana (Waldron); Lockport, etc., New York; and Grimsby, Ontario (Rochester).

Plesiotypes.—Cat. No. 35774, U.S.N.M.

Nematopora ovalis Ulrich.

Nematopora ovalis Ulrich, Jour. Cincinnati Soc. Nat. Hist., 12, 1890, p. 197, fig. 21.—Ulrich, Geol. Minnesota, 3, 1893, p. 204, pl. 3, figs. 24, 25.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 153, fig. 208a.—Bassler, Bull. U. S. Nat. Mus., 77, 1911, pp. 156, 157, fig. 77.

Nematopora quadrata Ulrich, Geol. Surv. Illinois, 8, 1890, p. 644, pl. 29, figs. 12-12c.—Simpson, 14th Ann. Rep. State Geol. New York for 1894, 1897, figs. 124, 125 (p. 553).

Trenton: Cannon Falls, Minnesota (Prosser); Trenton Falls, New York; Montreal, Quebec.

Middle Ordovician (Kuckers): Near Jewe, Esthonia, Russia.

Cotypes.—Cat. Nos. 43686, 43385, U.S.N.M.

NEMATOPORA QUADRATA Ulrich. See Nematopora ovalis.

Nematopora raripora (Hall).

Stictopora raripora Hall, Pal. New York, 2, 1852, p. 46, pl. 18, fig. 5a-c.

Ptilodictya? raripora Nicholson and Hinde, Canadian Jour., n. s., 14, 1874, p. 142.—Nicholson, Pal. Province Ontario, 1875, p. 45, fig. 19; figs. 4, 4a.

Upper Medinan (Cataract): Flamborough Head, Ontario.

Niagaran: Lockport, New York.

Nematopora retrorsa Ulrich.

Nematopora retrorsa Ulrich, Geol. Surv. Illinois, 8, 1890, p. 645, pl. 29, figs. 9-9b.—Savage, Bull. Geol. Surv. Illinois, 23, 1913, p. 44, pl. 1, fig. 5.

Upper Medinan (Girardeau): Alexander County, Illinois.

NEMATOPORA STRIATOPORA Ulrich. See Thamniscus striatopora.

NEMATOPORA STRIGOSA Ulrich. See Glauconome strigosa.

NEREIDAVUS Grinnell. Genotype: N. varians Grinnell.

Nereidavus Grinnell, Amer. Jour. Sci., 3d ser., 14, 1877, p. 230.—Miller, N. A. Geol. Pal., 1889, p. 519.

Nereidavus varians Grinnell.

Nereidavus varians Grinnell, Amer. Jour. Sci., 3d ser., 14, 1877, p. 230, figs. 1, 2.—Miller, N. A. Geol. Pal., 1889, p. 519, fig. 939.

Eunicites (Nereidavus) varians Hinde, Quart. Jour. Geol. Soc. London, 35, 1879, p. 375, pl. 18, figs. 2, 3, 5.

Eunicites varians Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 241, figs. 1530b, c.

Eden and Maysville: Cincinnati, Ohio, and vicinity; Toronto, Ontario.

NEREITES MacLeay. Genotype: N. cambrensis MacLeay.

Nereites MacLeay, Murchison's Sil. Syst., 1839, p. 700; Ann. Nat. Hist., 4, 1840, p. 386.—Richter, Zeits. d. d. geol. Gesell., 1, 1849, p. 457; ibid., 2, 1850, p. 70; ibid., 5, 1853, p. 450.—McCoy, British Pal. Rocks and Foss., 1854, p. 128.—Hall, Amer. Jour. Sci. Arts, 2d ser., 19, 1855, p. 434.—Zittel, Handb. Pal., 1, 1880, p. 567.—Nicholson and Etheridge, Mon. Sil. Foss., Girvan Dist., 1880, p. 305.—Miller, N. A. Geol. Pal., 1889, p. 519.

Nereites deweyi Emmons.

Nereites deweyi Emmons, Nat. Hist. New York, Agric., 1, 1846, p. 69, pl. 16, fig. 2; Man. Geology, 1860, p. 87, fig. 64.—Barrande, Bull. Soc. Geol. France, 2d, 18, 1861, p. 300, pl. 5, fig. 19.—Miller, N. A. Geol. Pal., 1889, p. 519, fig. 940.

Nereograpsus Deweyi Emmons, Amer. Geology, 1, pt. 2, 1855, p. 110, pl. 2, fig. 3.

Ordovician(?): Waterville, Maine.

Nereites gracilis Emmons.

Nereites gracilis Emmons, Nat. Hist. New York, Agric., 1, 1846, p. 69, pl. 16, fig. 3.

Nereograpsus gracilis Emmons, Amer. Geology, 1, pt. 2, 1855, p. 111, pl. 2, fig. 6.

Ordovician(?): Waterville, Maine.

Nereites jacksoni Emmons.

Nereites jacksoni Emmons, Nat. Hist. New York, Agric., 1, 1846, p. 69, pl. 15, fig. 3.

Nereograpsus Jacksoni Emmons, Amer. Geology, 1, pt. 2, 1855, p. 110, pl. 2, fig. 2.—Geinitz, Neues Jahrb. Min., etc., 1864, p. 6, pl. 2, fig. 4.

Ordovician(?): Waterville, Maine.

Nereites lanceolatus Emmons.

Nereites lanceolata Emmons, Nat. Hist. New York, Agric., 1, 1846, p. 69, pl. 16, fig. 6.

Nereograptus lanceolata Emmons, Amer. Geology, 1, pt. 2, 1855, p. 11, pl. 2, fig. 4.

Ordovician(?): Waterville, Maine.

Nereites loomisi Emmons.

Nereites loomisii Emmons, Nat. Hist. New York, Agric., 1, 1846, p. 69, pl. 15, fig. 2.—Packard, Proc. Amer. Acad. Arts Sci., 36, 1900, p. 64, footnote.

Nereograpsus Loomisi Emmons, Amer. Geology, 1, pt. 2, 1855, p. 110, pl. 2, fig. 5.

Ordovician(?): Waterville, Maine.

Nereites pugnus Emmons.

Nereites pugnus Emmons, Nat. Hist. New York, Agric., 1, 1846, p. 69, pl. 15, fig. 1; pl. 16, fig. 4.—Packard, Proc. Amer. Acad. Arts Sci., 36, 1900, p. 64, footnote.

Nereograpsus pugnus Emmons, Amer. Geology, 1, pt. 2, 1855, p. 111.

Ordovician(?): Waterville, Maine.

Nereites robustus (Emmons).

Nereograpsus robustus Emmons, Amer. Geology, 1, pt. 2, 1855, p. 111, pl. 2, fig. 7.

Nereites robustus Miller, N. A. Geol. Pal., 1889, p. 519 (gen. ref.).

Ordovician(?): Columbia County, New York.

NEREOGRAPSUS Emmons. See Nereites MacLeay.

NEWSOMELLA Foerste. See Rhombopteria Jackson.

NICHOLSONELLA Ulrich. Genotype: Nicholsonella ponderosa Ulrich.
Nicholsonella Ulrich, Geol. Surv. Illinois, 8, 1890, pp. 374, 421.—(Ulrich, in press) Miller, N. A. Geol. Pal., 1889, p. 313.—Ulrich, Geol. Minnesota, 3, 1893, p. 313; Zittel's Textb. Pal. (Engl. ed.), 1896, p. 276.—Simpson, 14th Ann. Rep. State Geol. New York for 1894, 1897, p. 590.—Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 34.—Bassler, Bull. U. S. Geol. Surv., 292, p. 37.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 136.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 751.—Bassler, Bull. U. S. Nat. Mus., 77, 1911, p. 224; Zittel-Eastman Textb. Pal., 1913, p. 334.

Nicholsonella cumulata Ulrich.
Nicholsonella cumulata Ulrich, Geol. Surv. Illinois, 8, 1890, p. 423, pl. 33, figs. 6-6c.—Simpson, 14th Ann. Rep. State Geol. New York for 1894, figs. 183-186 (p. 590).
Monticulipora cumulata J. F. James, Jour. Cincinnati Soc. Nat. Hist., 18, 1895, p. 74.
Richmond (Fernvale): Wilmington, Illinois.
Cotypes.—Cat. No. 43781, U.S.N.M.

Nicholsonella florida (Hall).
Callopora florida Hall, Pal. New York, 2, 1852, p. 146, pl. 40, figs. 2a-f.
Leioclema florida Ulrich, Geol. Surv. Illinois, 8, 1890, pp. 416, 425.
Lioclema florida Grabau, Bull. New York State Mus., 45, 1901, p. 165, fig. 62; Bull. Buffalo Soc. Nat. Sci., 7, p. 165, fig. 62.
Lioclema (?Nicholsonella) floridum Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 304.
Nicholsonella florida Bassler, Bull. U. S. Geol. Surv., 292, 1906, p. 38, pl. 14, figs. 10, 11; pl. 24, figs. 1, 2.
Clinton: Lockport, Rochester, etc., New York; Grimsby and Thorold, Ontario (Rochester); Osgood, Indiana (Osgood).
Plesiotype.—Cat. No. 35510, U.S.N.M.

Nicholsonella laminata Ulrich.
Nicholsonella laminata Ulrich, Geol. Minnesota, 3, 1893, p. 315, pl. 21, figs. 15-19, 21.
Black River (Decorah): Minneapolis and St. Paul, Minnesota.
Holotype.—Cat. No. 43550, U.S.N.M.

Nicholsonella peculiaris Cumings and Galloway.
Nicholsonella peculiaris Cumings and Galloway, 37th Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1913, p. 80, pl. 12, fig. 2; pl. 24, figs. 2, 2a.
Richmond (Arnheim): Big Four Railroad, near Harman's Station, Indiana.

Nicholsonella ponderosa Ulrich.
Nicholsonella ponderosa Ulrich, Geol Surv. Illinois, 8, 1890, p. 422, pl. 34, figs. 5-5d; Geol. Minnesota, 3, 1893, p. 316, pl. 21, figs. 13, 14, 20, 22.
Black River (Platteville): Dixon, Illinois; Minneapolis, Minnesota.
Holotype and *plesiotypes.*—Cat. Nos. 43392, 43551, U.S.N.M.

Nicholsonella pulchra Ulrich.
Nicholsonella pulchra Ulrich, Geol. Minnesota, 3, 1893, p. 314, pl. 21, figs. 8-12; Zittel's Textb. Pal. (Engl. ed.), 1896, fig. 462 (p. 276).—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 136, figs. 188o, 190o.—Bassler, Zittel-Eastman Textb. Pal., 1913, p. 334a-c.
Stones River (Pierce): Murfreesboro, Tennessee:
Cotypes.—Cat. No. 43552, U.S.N.M.

Nicholsonella ringuebergi Bassler.

Nicholsonella ringuebergi Bassler, Bull. U. S. Geol. Surv., 292, 1906, p. 39, pl. 14, figs. 12, 13.

Clinton (Rochester): Lockport, New York.

Holotype.—Cat. No. 35493, U.S.N.M.

Nicholsonella vaupeli (Ulrich).

Heterotrypa vaupeli Ulrich, Jour. Cincinnati Soc. Nat. Hist., 6, 1883, p. 85, pl. 1, figs. 2–2b.

Monticulipora vaupeli James and James, Jour. Cincinnati Soc. Nat. Hist., 11, 1888, p. 19.—J. F. James, ibid., 18, 1895, p. 71.

Nicholsonella vaupeli Ulrich, Geol. Surv. Illinois, 8, 1890, p. 421.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 136.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 863, pl. 21, figs. 3–3c; pl. 31, fig. 3.

Maysville (Bellevue): Cincinnati, Ohio, and vicinity.

Cotypes.—Cat. No. 43689, U.S.N.M.

NICHOLSONIA Waagen and Wentzel. See Escharopora Hall.

NICHOLSONIA PAVONICA Waagen and Wentzel. See Escharopora pavonia.

NIDULITES Salter. Genotype: N. favus Salter.

Nidulites Salter, Quart. Jour. Geol. Soc. London, 1851, 7, p. 174.—Morris, Cat. British Foss., 1854, 2d ed., p. 362.—Bigsby, Thesaurus Sil., 1868, p. 4.—Salter, Cat. Camb. and Sil. Foss., Woodwardian Mus., Cambg., 1873, p. 72.—Nicholson and Etheridge, Mon. Sil. Foss. Girvan Dist., 1, 1878, p. 10.

Nidulites favus Salter.

Nidulites favus Salter, Quart. Jour. Geol. Soc. London, 7, 1851, p. 174, pl. 9, figs. 16, 17; Cat. Camb. and Sil. Foss., 1873, p. 72, figs.—Nicholson and Etheridge, Mon. Sil. Foss. Girvan Dist., 1, 1880, p. 18, pl. 9, figs. 15–22.—Ami, Ottawa Nat., 8, No. 6, 1894, p. 2.

Middle Ordovician: England; Quebec, Canada.

Nidulites gregarius (Billings).

Pasceolus gregarius Billings, Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 72.—Kayser, Zeits. d. d. geol. Gesell., 27, 1875, p. 780.—Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 3, 1897, p. 144.

Gyclocrinus gregarius Stolley, Archiv. Anthrop. Geol. Schleswig-Holsteins, 1, Heft 2, 1896, p. 215 (gen. ref.).

Anticostian (Gun River): Reef Point, Anticosti.

Nidulites intermedius (Billings).

Pasceolus intermedius Billings, Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 72.—Kayser, Zeits. d. d. geol. Gesell., 27, 1875, p. 780.

Cyclocrinus intermedius Stolley, Archiv. Anthrop. Geol. Schleswig-Holsteins, 1, Heft 2, 1896, p. 215 (gen. ref.).

Anticostian (Gun River): Three miles west of Jupiter River, Anticosti.

Nidulites pyriformis Bassler (new species).

Nidulites sp. Bassler, Bull. Virginia Geol. Surv., 2a, 1909, pl. 7, fig. 11.

Middle Ordovician (Chambersburg): Strasburg, etc., Virginia; Maryland; Pennsylvania.

NIESZKOWSKIA Schmidt. Genotype: Cyrtometopus tumidus Angelin.

Nieszkowskia Schmidt, Mem. l'Acad. Imp. Sci. St. Petersburg, 7th ser., 30, 1881, pp. 124, 126, 130, 179.—Zittel, Handb. Pal., 2, 1885, p. 618.—Clarke, Geol.

NIESZKOWSKIA—Continued.

Minnesota, 3, pt. 2, 1894, pp. 737-738.—Reed, Geol. Mag., dec. 4, 3, 1896, pp. 118, 162.—Koken, Die Leitfossilien, Leipzig, 1896, p. 35, figs. 7, 7a.—Reed, Geol. Mag., dec. 4, 5, 1898, p. 208.—Raymond, Annals Carnegie Mus., 3, 1905, p. 376; Zittel-Eastman Textb. Pal., 1913, p. 725.

Nieszkowskia billingsi (Raymond).

Cheirurus vulcanus Billings, Pal. Foss. Canada, 1, 1865, p. 324, fig. 310a-c (not p. 271, figs. 271a-e).

Pseudosphærexochus vulcanus billingsi Raymond, Ann. Carnegie Mus., 3, 1905, p. 369, pl. 14, fig. 17, text fig. 11; 7th Rep. Vermont State Geol., 1910, p. 242, pl. 36, fig. 17.

Chazyan (Valcour): Sloop Bay and Valcour Island, New York; Stanbridge, Quebec.

Nieszkowskia glaucus (Billings).

Cheirurus Glaucus Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 323, figs. 308a, b.

Ceraurus (Nieszkowskia) glaucus Clarke, Geol. Minnesota, 3, pt. 2, 1894, p. 738.

Chazyan(?): Stanbridge, Quebec.

Nieszkowskia mars (Hudson).

Cheirurus mars Hudson, Bull. New York State Mus., 80, 1905, p. 205, pl. 5, figs. 1, 2.

Nieszkowskia mars Raymond, 7th Rep. Vermont State Geol., 1910, p. 244.

Chazyan (Valcour): Valcour Island, New York.

Nieszkowskia perforator (Billings).

Cheirurus perforator Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 287, fig. 275.

Ceraurus (Nieszkowskia) perforator Clarke, Geol. Minnesota, 3, pt. 2, 1894, p. 738 (gen. ref.).

Chazyan (Quebec-N): Table Head, Newfoundland.

Nieszkowskia satyrus (Billings).

Cheirurus Satyrus Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 324, fig. 309.

Ceraurus (Nieszkowskia) satyrus Clarke, Geol. Minnesota, 3, pt. 2, 1894, p. 738.

Pseudosphærexochus (Nieszkowskia) satyrus Raymond, Ann. Carnegie Mus., 3, 1905, p. 371, pl. 14, fig. 21.

Nieszkowskia satyrus Raymond, 7th Rep. Vermont State Geol., 1910, p. 224, pl. 36, fig. 21.

Chazyan (Valcour): Montreal, Quebec; Sloop Island, east of Valcour Island, New York.

NILEUS Dalman. Genotype: Asaphus (Nileus) armadillo Dalman.

Nileus Dalman, Svenska Vet.-Akad. Handl., 1826, 1827, pp. 246, 276.—Dalman-Engelhart, Die Palaeaden, Nurnberg, 1828, p. 49.—Green, Mon. Tril. N. A., 1838, p. 18.—Eichwald, Zool. Specialis, pt. 2, Vilnae, 1830, p. 116.—Goldfuss, Neues Jahrb. Min., etc., 1843, pp. 540, 551.—Burmeister, Org. der Tril., Berlin, 1843, p. 123.—Rouault, Bull. Soc. Geol. France, 2d ser., 4, 1847, p. 318.—Hawle and Corda, Abh. d. k. bohmischen Gesell., d. Wiss., 5, 1847 (extract), p. 52, pl. 4, fig. 35.—Angelin, Pal. Scandinavica, 3d ed., Holmiae, 1878, p. 18.—Barrande, Neues Jahrb. Min., etc., 1850, p. 779.—Pictet, Traite de Pal., 2d ed., 2, 1854, p. 516.—Salter, Mon. British Tril., Pal. Soc., 1866, pp. 148, 171.—Zittel, Handb. Pal., 2, 1885, p. 610.—Brögger, Bihang till K. Sven. Vet.-Akad. Handl., 11, No. 3, 1886, p. 64; Afh. Sveriges Geol. Unders., Ser. C, No. 82, 1886, p. 64.—Miller, N. A. Geol. Pal., 1889, p. 557.—Koken,

NILEUS—Continued.

Die Leitfossilien, Leipzig, 1896, p. 28.—Schmidt, Mem. l'Acad. Imp. Sci. St. Petersburg, 8th ser., 6, 1898, pp. 11, 45.—Beecher, Zittel-Eastman, Textb. Pal., 1, 1900, p. 630.—Lindstrom, Kongl. Sven. Vet.-Akad. Handl., 34, No. 8, 1901, pp. 26, 61.—Schmidt, Mem. l'Acad. Imp. Sci. St. Petersburg, 8th ser., 14, No. 10, 1904, p. 63.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 299.—Slocom, Field Mus. Nat. Hist., Geol. Serv., 4, No. 3, 1913, p. 52.—Raymond, Trans. and Proc. Roy. Soc. Canada, 5, 3d ser., sec. 4, 1912, p. 116: Zittel-Eastman Textb. Pal., 1913, p. 719.

Nileus affinis Billings.

Nileus affinis Billings, Pal. Fossils, 1, Geol. Surv. Canada, 1865, p. 275, fig. 261.—Raymond, Trans. and Proc. Roy. Soc. Canada, 3d ser., 5, sec. 4, 1912, p. 120, pl. 3, fig. 4.

Canadian: Cow Head, Newfoundland (Quebec—P); Isle of Orleans and Point Levis, Quebec.

Nileus macrops Billings.

Nileus macrops Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 273, fig. 259.—Miller, N. A. Geol. Pal., 1889, p. 557, fig. 1034.

Chazyan (Quebec—N): Table Head, Newfoundland.

Nileus perkinsi Raymond.

Nileus perkinsi Raymond, Ann. Carnegie Mus., 7, 1910, p. 69, pl. 18, figs. 7–8; 7th Rep. Vermont State Geol., 1910, p. 224, pl. 38, figs. 7–8.—Perkins, Rep. Vermont State Geol., 8th ser., 1912, pl. 18, figs. 7, 8.—Raymond, Trans. and Proc. Roy. Soc. Canada, 3d ser., 5, sec. 4, 1912, p. 119, pl. 2, fig. 8; pl. 3, fig. 1.

Chazyan (Valcour): Isle La Motte, Vermont.

Nileus scrutator Billings.

Nileus scrutator Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 274, fig. 260.

Chazyan (Quebec—N, P): Table Head and P. Portland Creek, Newfoundland.

Nileus striatus Whitfield.

Nileus striatus Whitfield, Bull. Amer. Mus. Nat. Hist., 9, 1897, p. 184, pl. 5, figs. 5, 6.—Seely, Vermont State Geol., Rep. 7, 1910, pl. 55, figs. 5, 6.

Canadian (Beekmantown): Fort Cassin, Vermont.

Nileus vigilans (Meek and Worthen).

Asaphus (Isotelus) vigilans Meek and Worthen, Proc. Acad. Nat. Sci. Philadelphia, 1870, p. 53; Geol. Surv. Illinois, 6, 1875, p. 497, pl. 23, fig. 6.

Illænus (Nileus) minnesotensis Foerste, 15th Rep. Geol. Nat. Hist. Surv. Minnesota, 1886, p. 478, fig. 1.

Nileus vigilans Clarke, Geol. Minnesota, 3, pt. 2, 1894, p. 712, figs. 17–19.—Schuchert, Proc. U. S. Nat. Mus., 22, 1900, p. 173.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 299, fig. 1610c, d.—Finch, Proc. Iowa Acad. Sci., 11, 1904, p. 179, pl. 14.—Slocom, Field Mus. Nat. Hist., Geol. Ser., 4, No. 3, 1913, p. 52, pl. 14, figs. 9–15.

Richmond (Maquoketa): Carrol and Osage Counties, Illinois; Iowa.

Black River and Trenton: Minnesota, Baffin Land, etc.

Plesiotypes.—Cat. No. 41913, U.S.N.M. (Clarke).

NIOBE MACCOYI Frech. See Dolichometopus maccoyi.

NIPTERELLA Hinde. Genotype: Calathium? paradoxicum Billings.

Nipterella Hinde, Quart. Jour. Geol. Soc. London, 45, 1889, p. 144.—Rauff, Palæontographica, 40, 1894, p. 241.

Nipterella paradoxica (Billings).

Calathium? paradoxicum Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 358, fig. 345.—Bornemann, Verstein. Cambr. Sardin., N. Act. Leop. Car. Akad. Naturf., 51, 1886, p. 33.

Nipterella paradoxica Hinde, Quart. Jour. Geol. Soc. London, 45, 1889, p. 144, pl. 5, fig. 15; Canadian Rec. Sci., 3, 1889, p. 374.—Rauff, Palæontographica, 40, 1894, p. 241, pl. 1, figs. 11–14.

Canadian (Romaine): Mingan Island, Canada.

NUCLEOSPIRA Hall. Genotype: Spirifer ventricosa Hall.

Nucleospira Hall, 12th Rep. New York State Cab. Nat. Hist., 1859, p. 24; Pal. New York, 3, 1859, p. 219; ibid., 4, 1867, p. 278.—Zittel, Handb. Pal., 1, 1880, p. 685.—Davidson, Mon. British Foss. Brach., 5, Sil. Suppl.; Pal. Soc., 1882, pp. 82, 91.—Miller, N. A. Geol. Pal., 1889, p. 355.—Nettelroth, Kentucky Fossil Shells, Mem. Kentucky Geol. Surv., 1889, p. 103.—Hall and Clarke, Pal. New York, 8, pt. 2, 1893, p. 142; 13th Ann. Rep. New York State Geol., 1895, p. 806.—Koken, Die Leitfossilien, Leipzig, 1896, p. 240, fig. 200, 6, 7.—Grabau, Bull. Buffalo Soc. Nat. Sci., 6, 1899, p. 222.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 349.—Schuchert, Zittel-Eastman Textb. Pal., 1900, p. 338; ibid, 1913, p. 415.

Nucleospira concentrica Hall.

Nucleospira concentrica Hall, Pal. New York, 3, 1859, p. 223, pl. 28B, figs. 15-19.—Hall and Clarke, ibid., 8, pt. 2, 1895, pl. 48, fig. 7.—Foerste, Jour. Geol., 11, 1903, p. 709 (loc. occ.).

Niagaran (Brownsport): Decatur County, Tennessee.

Nucleospira elegans Hall.

Nucleospira elegans Hall, Pal. New York, 3, 1859, p. 222, pl. 28B, figs. 10-15.—Nettelroth, Kentucky Fossil Shells, Mem. Kentucky Geol. Survey, 1889, p. 104.—Hall and Clarke, Pal. New York, 8, pt. 2, 1895, pl. 48, figs. 8-11.—Schuchert and Maynard, Maryland Geol. Surv., Low. Dev., 1913, p. 431, pl. 73, figs. 13, 14.

Helderbergian: Cherry Valley, New York (New Scotland); Cumberland, Cash Valley, etc., Maryland (Keyser); (?)Niagaran at Louisville, Kentucky.

Plesiotypes.—Cat. No. 51324, U.S.N.M. (Nettelroth).

Nucleospira pisiformis Hall.

Orthis pisum Hall (not Sowerby) Pal. New York, 2, 1852, p. 250, pl. 2, fig. 1.

Nucleospira pisiformis Hall, Pal. New York, 3, 1859, pl. 28B; Trans. Albany Inst., 4, 1863, p. 226; 28th Rep. New York State Mus. Nat. Hist., 1879, p. 160, pl. 25, figs. 22–28; 11th Rep. State Geol. Indiana, 1882, p. 301, pl. 25, figs. 22-28.—Davidson, Mon. British Foss. Brach., 5, Sil. Suppl., Pal. Soc., 1882, p. 92.—Kayser, Richthofens China, 4, 1883, p. 47, pl. 4, figs. 9–11.—Nettelroth, Kentucky Fossil Shells, Mem. Kentucky Geol. Surv., 1889, p. 104, pl. 33, figs. 7-9.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 468, figs.—Miller, N. A. Geol. Pal., 1889, p. 355, fig. 587.—Keyes, Geol. Surv. Missouri, 5, 1895, p. 94, pl. 41, fig. 5.—Kindle and Breger, 28th Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1904, p. 444, pl. 8, fig. 29.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 349, fig. 453.

Niagaran: Wolcott, New York (Clinton); Waldron, etc., Indiana (Osgood and Waldron); Louisville, Kentucky; Tennessee; Missouri.

Plesiotypes.—Cat. No. 51367, U.S.N.M. (Nettelroth).

NUCLEOSPIRA ROTUNDATA Whitfield. See Whitfieldella rotundata.

Nucleospira swartzi Maynard.

Nucleospira swartzi Maynard, Maryland Geol. Surv., Low. Dev., 1913, p. 432, pl. 73, figs. 15–17.

Helderbergian (Keyser): Cookerly, Devils Backbone, and Cash Valley, Maryland; Keyser, West Virginia.

Nucleospira ventricosa (Hall).

Spirifer ventricosa Hall, 10th Ann. Rep. New York State Cab. Nat. Hist., 1857, p. 57.

Nucleospira ventricosa Hall, Pal. New York, 3, 1859, p. 220, pl. 14, fig. 1; pl. 28b, figs. 2–9, 14.—Schuchert and Maynard, Maryland Geol. Surv., Low. Dev., 1913, p. 430, pl. 73, figs. 10–12.

Helderbergian: Schoharie, etc., New York (New Scotland); Moorefield, West Virginia (Keyser).

NUCULA Hall. See Ctenodonta Salter.

Nucula minuta Owen — Not recognized.

Nucula minuta Owen, Geol. Expl. Iowa, Wisconsin, Illinois, 2d ed., 1844, p. 78, pl. 14, fig. 5.

Niagaran: Iowa and Wisconsin.

NUCULA POSTRIATA Hall. See Lyrodesma cannonense and L. poststriatum.

NUCULITES (part) Grabau and Shimer. See Clidophorus Hall.

NUCULITES Conrad. Genotypes: N. oblongatus and N. cuneiformis Conrad.

Nuculites Conrad, 5th Ann. Rep. New York Geol. Surv., 1841, p. 49.—Hall, Canadian Nat. Geol., 1, 1856, p. 394; Pal. New York, 5, pt. 1, Lam. 2, 1885, p. 26.—Miller, N. A. Geol. Pal., 1889, p. 496.—Grabau, Bull. Buffalo Soc. Nat. Sci., 6, 1899, p. 254.

Nuculites (Orthonota) carinatus Dawson.

Nuculites (Orthonota) carinata Dawson, Acadian Geol. Suppl. Chap., 1860, p. 68, fig. 56.—Hall, Canadian Nat. Geol., 5, 1860, p. 151, fig. 10.—Dawson, Acadian Geol., 2d ed., 1868, p. 602, fig. 207.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 475, fig.

Silurian: Arisaig, Nova Scotia.

Nuculites corrugatus Williams.

Nuculites corrugata Williams, Proc. U. S. Nat. Mus., 45, 1913, p. 347, pl. 31, figs. 11, 14.

Silurian (Pembroke): Leighton Cove, Washington County, Maine.

Cotypes.—Cat. No. 58976, U.S.N.M.

NUCULITES FABA Emmons. See Colpomya faba.

NUCULITES (CLEIDOPHORUS) FERRUGINEUS Foerste. See Clidophorus ferrugineus.

NUCULITES INFLATA Emmons. See Cypricardites inflatus.

NUCULITES NEGLECTUS Grabau and Shimer. See Clidophorus neglectus.

NUCULITES PLANULATA Conrad. See Clidophorus planulatus.

NUCULITES POSTSTRIATA Emmons. See Lyrodesma poststriatum.

NUCULITES SCITULA Emmons. See Clidophorus planulatus.

NUCULITES YOLDIAFORMIS Ulrich. See Technophorus yoldiaformis.

NUTTAINIA Eaton. See Cryptolithus Green.

NUTTAINIA CONCENTRICA Eaton. See Cryptolithus tessellatus.

NYCTOPORA Nicholson. Genotype: N. billingsi Nicholson.
Nyctopora Nicholson, Tab. Corals Pal. Period, 1879, p. 182.—Roemer, Leth. geog., pt. 1, Leth. Pal., 1883, p. 423.—Miller, N. A. Geol. Pal., 1889, p. 198.—Lambe, Cont. Can. Pal. Geol. Surv. Canada, 4, pt. 1, 1889, p. 48.

Nyctopora billingsi Nicholson.
Nyctopora Billingsii Nicholson, Tab. Corals Pal. Period, 1879, p. 184, pl. 9, figs. 3–3c.—Lambe, Cont. Can. Pal. Geol. Surv. Canada, 4, pt. 1, 1889, p. 49, pl. 2, figs. 1, 1a.—Weller, Geol. Surv. New Jersey Pal., 3, 1903, p. 137, pl. 7, figs. 1, 2.
Columnaria Goldfussi Nicholson (not Billings, 1857), Pal. Ontario, 1875, p. 9.
Trenton: Peterboro, Ontario; Jacksonburg, New Jersey.

OBOLELLA Hall and Clarke (part). See Dicellomus Hall.

OBOLELLA? AMBIGUA Walcott. See Elkania ambigua.

OBOLELLA BELTI Davidson. See Acrotreta belti.

OBOLELLA DESIDERATA Billings. See Elkania desiderata.

OBOLELLA DISCOIDEA Hall and Whitfield. See Obolus discoidea.

OBOLELLA? GEMMULA Matthew. See Lingulella ferruginea.

OBOLELLA IDA Billings. See Elkania ida.

OBOLELLA? MINUTA Walcott. See Linnarssonella minuta.

OBOLELLA NANA Meek and Hayden. See Dicellomus nanus.

OBOLELLA PRETIOSA Billings. See Acrothele pretiosa.

OBOLELLA SALTERI Holl. See Obolus (Bröggeria) salteri.

OBOLELLINA Billings. See Dinobolus Hall.

OBOLELLINA GALTENSIS Billings. See Rhinobolus galtensis.

OBOLUS Eichwald. Genotype: O. apollinus Eichwald.
Obolus Eichwald, Zoologia specialis, 1, 1829, p. 274.—Davidson ibid, (part), British Fossil Brach., 1, 1853, pp. 135–136; 3, pt. 7, 1866, p. 58.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pp. 80, 81; ibid., pp. 337–339.—Walcott, Smiths. Misc. Coll., 53, 1908, pl. 11, pp. 142 and 144; Mon. U. S. Geol. Surv., 51, pt. 1, 1912, p. 370. (See for complete bibliography.)—Schuchert, Zittel-Eastman Textb. Pal., 1, 1900, p. 306; ibid., 2d ed., 1913, p. 371.
Lingulobolus Matthew, Trans. Roy. Soc. Canada, 2d ser., 1, 1895, pp. 260–261.
Sphærobolus Matthew, Trans. Roy. Soc. Canada, 2d ser., 1, 1895, p. 263.
Obolus (Lingulobolus) Walcott, Proc. U. S. Nat. Mus., 23, 1901, p. 683; Smiths. Misc. Coll., 53, 1908, pl. 11, pp. 142, 144.
Lingulobolus (subgenus of Obolus) Walcott, Mon. U. S. Geol. Surv., 51, pt. 1, 1912, p. 430. (Genotype: Lingulella? affinis Billings.)
Obolus (Bröggeria) Walcott, Proc. U. S. Nat. Mus., 25, 1902, p. 605; Smiths. Misc. Coll., 53, 1908, pl. 11, pp. 142, 144.
Bröggeria Walcott, Monog. U. S. Geol. Surv., 51, pt. 1, 1912, p. 424. (Genotype: Obolella salteri Hall.)

OBOLUS—Continued.

Palæobolus Matthew, Bull. Nat. Hist. Soc. New Brunswick, 4, pt. 3, 1899, pp. 201–202; Geol. Surv. Canada, Rep. Cambrian Rocks Cape Breton, 1903, pp. 140–141.

Obolus (Palæobolus) Walcott, Smiths. Misc. Coll., 53, 1908, pl. 11, pp. 142, 144; U. S. Geol. Surv. Mon., 51, pt. 1, 1912, p. 426. (Genotype: Palæobolus bretonensis Matthew.)

Obolus (Westonia) Walcott, Proc. U. S. Nat. Mus., 23, 1901, pp. 683 and 691; Smiths. Misc. Coll., 53, 1908, pl. 11, and pp. 142 and 144; Mon. U. S. Geol. Surv., 51, pt. 1, 1912, p. 450.

Westonia Matthew, Geol. Surv. Canada, Rep. Cambrian Rocks Cape Breton, 1903, p. 205. (Genotype: Lingula aurora Hall.)

OBOLUS (LINGULEPIS) ACUMINATUS Walcott. See Lingulella (Lingulepis) acuminata.

Obolus (Lingulobolus) affinis (Billings).

Lingulella? affinis Billings, Canadian Nat., 2d ser., 6, 1872, p. 468; fig. 4, p. 467; Geol. Surv. Canada, Pal. Foss., pt. 1, 1874, p. 67, fig. 35, p. 66; Geol. Surv. Newfoundland, Rep. Progr. 1881, App., 1882, p. 15.

Lingulepis affinis Walcott, Amer. Jour. Sci., 3d ser., 37, 1889, p. 381 (gen. ref.).

Lingulobolus affinis Matthew, Trans. Roy. Soc. Canada, 2d ser., 1, sec. 4, 1895, p. 261, pl. 1, figs. 4a, b.—Grabau, Boston Soc. Nat. Hist., 1, pt. 3, 1900, p. 621.

Lingulobolus affinis cuneata Matthew, Trans. Roy. Soc. Canada, 2d ser., 1, sec. 4, 1895, p. 262, pl. 1, figs. 4c, 4d.

Obolus (Lingulobolus) affinis Walcott, Amer. Jour. Sci., 4th ser., 6, 1898, p. 327; Mon. U. S. Geol. Surv., 51, 1912, p. 431.

Lower Ordovician: One mile north of Lance Cove, Great Bell Island, Conception Bay, Newfoundland; Limestone pebble in Carboniferous conglomerate, north of Fall River, Bristol County, Massachusetts.

Plesiotype.—Cat. No. 51679, U.S.N.M.

Obolus anceps Walcott.

Obolus anceps Walcott, Proc. U. S. Nat. Mus., 21, 1898, pp. 388–389; Mon. U. S. Geol. Surv., 51, 1912, p. 380, pl. 10, figs. 3, 3a–f.

Upper Cambrian and Lower Ordovician: Northeast of Adams Hill, Eureka District, Eureka County, Nevada.

Holotype and *paratypes.*—Cat. Nos. 27302, 51541, U.S.N.M.

OBOLUS BELLI Walcott. See Lingula (Palæoglossa) belli.

OBOLUS (LINGULELLA) BELLUS Walcott. See Lingulella bella, L. lens and L. concinna.

Obolus (Palæobolus) bretonensis (Matthew).

Palæobolus bretonensis Matthew, Bull. Nat. Hist. Soc. New Brunswick, 4, pt. 3, 1899, p. 202, pl. 2, figs. 2a–i; Geol. Surv. Canada, Rep. Cambrian Rocks Cape Breton, 1903, pp. 141–143, pl. 9, figs. 2a–h.

Obolus bretonensis Matthew, Trans. Roy. Soc. Canada, 2d ser., 8, sec. 4, 1902, p. 95, pl. 1, figs. 5a–e.

Obolus (Palæobolus) bretonensis Walcott, Mon. U. S. Geol. Surv., 51, 1912, p. 426, pl. 32, figs. 5a–g.

Middle Cambrian and Canadian (Bretonian—Div. C3a): McAdams shore, East Bay, Cape Breton, Nova Scotia.

OBOLUS CANADENSIS Billings. See Dinobolus magnificus and D. canadensis.

OBOLUS (LINGULELLA) CONCINNUS Walcott. See Lingulella concinna.

OBOLUS CONRADI Hall. See Dinobolus conradi.

Obolus cyane (Billings).

Lingula cyane Billings, Geol. Surv. Canada, Pal. Foss., 1, 1865, p. 216, figs. 200a–d, p. 215.

Glossina cyane Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 224.

Obolus cyane Walcott, Mon. U. S. Geol. Surv., 51, 1912, p. 388, pl. 27, figs. 4a-b.

Chazyan (Quebec—P): Four miles northeast of Portland Creek, Newfoundland.

OBOLUS (LINGULELLA) DESIDERATA Walcott. See Lingulella desiderata and Obolus rotundatus.

Obolus discoideus (Hall and Whitfield).

Obolella discoidea Hall and Whitfield, U. S. Geol. Expl. 40th Par., 4, 1877, p. 205, pl. 1, figs. 1 and 2.—Walcott, Mon. U. S. Geol. Surv., 8, 1884, p. 14; Bull. U. S. Geol. Surv., 30, 1886, p. 111.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 69.

Obolus (Lingulella) discoideus Walcott, Proc. U. S. Nat. Mus., 23, 1901, p. 673.

Obolus discoideus Walcott, Mon. U. S. Geol. Surv., 51, 1912, p. 389, pl. 18, figs. 6a–d.

Lowest Ordovician: Blacksmith Fork Canyon, nine miles east of Hyrum, Cache County, Utah. Also Upper and Middle Cambrian of Nevada, etc.

Plesiotypes.—Cat. Nos. 24555, 51547, U.S.N.M.

Obolus dolatus (Sardeson).

Lingula dolata Sardeson, Bull. Minnesota Acad. Nat. Sci., 4, 1896, p. 95, pl. 6, fig. 12.

Obolus dolatus Walcott, Mon. U. S. Geol. Surv., 51, 1912, p. 390, figs. 35A–C.

Ozarkian (Oneota): Stillwater, Washington County, Minnesota.

OBOLUS (LINGULELLA) ELLSI Walcott. See Lingulella ellsi.

Obolus (Westonia) elongatus Walcott.

Obolus (Westonia) elongatus Walcott, Smiths. Misc. Coll., 53, 1908, p. 68, pl. 7, fig. 12; Mon. U. S. Geol. Surv., 51, 1912, p. 459, pl. 63, figs. 8–8d.

Middle Ordovician: Wasatch Canyon, about five miles north of Brigham, Boxelder County, Utah.

Holotype and *plesiotypes.*—Cat. No. 51722, U.S.N.M.

Obolus (Westonia) escasoni (Matthew).

Lingulella(?) escasoni Matthew, Bull. Nat. Hist. Soc. New Brunswick, 4, pt. 4, 1901, pp. 270–273, pl. 5, figs. 1a–i.

Obolus (Westonia) escasoni Walcott, Proc. U. S. Nat. Mus., 23, 1901, p. 691; Mon. U. S. Geol. Surv., 51, pt. 1, 1912, p. 459, pl. 49, figs. 1a–f.

Westonia escasoni Matthew, Geol. Surv. Canada, Rep. Cambrian Rocks Cape Breton, 1903, pp. 206–209, pl. 16, figs. 1a–i.

Canadian (Bretonian—Div. C3a, b): McAdam shore, East Bay, Cape Breton, Nova Scotia.

OBOLUS GALTENSIS Billings. See Rhinobolus galtensis.

OBOLUS (LINGULEPIS) GREGWA Walcott (part). See Lingulella (Lingulepis) exigua.

Obolus (Westonia) iphis Walcott.

Obolus (Westonia) iphis Walcott, Proc. U. S. Nat. Mus., 28, 1905, p. 336; Mon. U. S. Geol. Surv., 51, 1912, p. 462, pl. 49, figs. 4, 4a–d.

Lower Ordovician (Pogonip): East of Hamburg Ridge, Eureka District, Eureka County, Nevada; also Upper Cambrian of Nevada and Utah.

Holotype and *paratypes.*—Cat. Nos. 51720, 51542, U.S.N.M.

OBOLUS (LINGULELLA) LENS Walcott. See Lingulella lens.

Obolus loperi Walcott.

Obolus loperi Walcott, Proc. U. S. Nat. Mus., 21, 1898, pp. 389–390; Mon. U. S. Geol. Surv., 51, 1912, p. 395, pl. 9, figs. 4, 4a.

Upper Cambrian or Lower Ordovician: Cement Creek, southeast of Crested Butte, Ouray County, Colorado.

Holotype and *paratypes*.—Cat. No. 27303, U.S.N.M.

Obolus maera (Hall and Whitfield).

Lingulepis maera Hall and Whitfield, U. S. Geol. Expl., 40th Par., 4, 1877, p. 206, pl. 1, figs. 5–7.—Walcott, Mon. U. S. Geol. Surv., 8, 1884, pp. 12, 13.

Lingulella? maera Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 61 (gen. ref.).—Walcott, Amer. Jour. Sci., 4th ser., 3, 1897, p. 404.

Obolus (Lingulella) maera Walcott, Mon. U. S. Geol. Surv., 32, pt. 2, 1899, p. 443 (gen. ref.).

Obolus maera Walcott, Mon. U. S. Geol. Surv., No. 51, 1912, p. 399, pl. 10, figs. 2, 2a–e.

Upper Cambrian or Lower Ordovician (Pogonip): Roundtop Mountain, Eureka District, Eureka County, Nevada; Garfield County, Colorado. Also Upper and Middle Cambrian of Nevada.

Obolus matinalis (Hall).

Orbicula prima Owen, Rep. Geol. Surv. Wisconsin, Iowa, and Minnesota, 1852, p. 583, pl. 1B, figs. 13 and 16–19.

Lingulepis pinnaformis Hall (not Owen), 16th Ann. Rep. New York State Cab. Nat. Hist., 1863, p. 129, pl. 6, figs. 12, 13 (not figs. 14–16); Trans. Albany Inst., 5, 1867, p. 107, pl. 1, figs. 12 and 13 (not figs. 14–16).

Lingulepis matinalis Hall, 16th Ann. Rep. New York State Cab. Nat. Hist., 1863, p. 130, pl. 6, figs. 12–13; Trans. Albany Inst., 5, 1867, p. 107, pl. 1, figs. 12 and 13 (not fig. 15).

Lingulella? matinalis Walcott, Amer. Jour. Sci., 4th ser., 3, 1897, p. 404 (gen. ref.).

Obolus (Lingulella) matinalis Walcott, Mon. U. S. Geol. Surv., 32, pt. 2, 1899, p. 443 (gen. ref.).

Obolus matinalis Walcott, Mon. U. S. Geol. Surv., 51, 1912, p. 400, pl. 8, figs. 1, 1a–k.

Lower Ordovician: Near Manitou, El Paso County, Colorado. Also Upper and Middle Cambrian of Wyoming, Minnesota, Montana, etc.

Plesiotypes.—Cat. Nos. 51563, 51564, etc., U.S.N.M.

Obolus mcconnelli pelias (Walcott).

Obolus (Lingulella) pelias Walcott, Proc. U. S. Nat. Mus., 28, 1905, p. 330.

Obolus mcconnelli pelias Walcott, Mon. U. S. Geol. Surv., 51, 1912, p. 398, pl. 22, figs. 3b, 3c.; pl. 39, figs. 5, 5a–c.

Middle Cambrian to Lower Ordovician: Various localities in Utah and Nevada.

Holotype and *paratypes*.—Cat. No. 51592, U.S.N.M.

Obolus mollisonensis Walcott.

Obolus mollisonensis Walcott, Smiths. Misc. Coll., 57, 1912, p. 231, pl. 35, figs. 10–12.

Lower Ordovician (Goodsir): West side Moose Creek Valley, Mount Mollison, British Columbia.

Obolus? murrayi Billings.

Obolus? murrayi Billings, Geol. Surv. Canada, Pal. Fossils, 1, 1865, p. 362.—Walcott, Mon. U. S. Geol. Surv., 51, 1912, p. 405, pl. 15, fig. 12.

Canadian(?): Maiden Arm, Hare Bay, east side of northern point of Newfoundland.

Obolus (Westonia) notchensis Walcott.

Obolus (Westonia) notchensis Walcott, Smiths. Misc. Coll., 53, 1908, p. 69, pl. 7, fig. 13; Mon. U. S. Geol. Surv., 51, 1912, p. 463.

Lower Ordovician: Notch Peak, House Range, Millard County, Utah.

Holotype.—Cat. No. 51731, U.S.N.M.

OBOLUS (LINGULELLA) PELIAS Walcott. See Obolus mcconnelli pelias.

OBOLUS (LINGULELLA) POGONIPENSIS Walcott. See Lingulella pogonipensis.

Obolus refulgens Matthew.

Obolus refulgens Matthew, Trans. Roy. Soc. Canada, 9, 1892, p. 44, pl. 12, figs. 6a–6d.—Mickwitz, Mém. l'Acad. Imp. Sci. St. Pétersbourg, 8, 1896, p. 23.—Matthew, Trans. Roy. Soc. Canada, 2d ser., 8, sec. 4, 1890, p. 96, pl. op. p. 112, figs. 11a–b.—Walcott, Mon. U. S. Geol. Surv., 51, 1912, p. 409, pl. 9, figs. 2a–d.

Obolus (Monobolina) refulgens Matthew, Trans. Roy. Soc. Canada, 2d ser., 8, sec. 4, 1902, p. 98.

Monobolina refulgens Matthew, Geol. Surv. Canada, Rep. Cambrian Rocks Cape Breton, 1903, p. 210, pl. 16, figs. 2a, b; also pl. 11, fig. 4.—Hahn, Ann. New York Acad. Sci., 22, 1912, p. 142.

Canadian (Bretonian—Div. C3c): Navy Island, St. John Harbor, New Brunswick; and McLeod Brook, Cape Breton, Nova Scotia.

Obolus (Westonia) rogersi (Walcott).

Lingula prima Rogers (not Conrad MS., Hall), Proc. Boston Soc. Nat. Hist., 7, 1861, p. 390.

Lingula antiqua Rogers (not Emmons), Proc. Boston Soc. Nat. Hist., 7, 1861, p. 390.

Obolus (Lingulella) rogersi Walcott, Proc. U. S. Nat. Mus., 21, 1898, pp. 413–415.

Lingulella rogersi Grabau, Occas. Papers Boston Soc. Nat. Hist., 1, pt. 3, 1900, p. 624, pl. 31, fig. 4.

Obolus (Westonia) rogersi Walcott, Proc. U. S. Nat. Mus., 23, 1901, p. 691; Mon. U. S. Geol. Surv., 51, 1912, p. 463, pl. 42, figs. 2, 2a–d.

Lower Ordovician: Limestone pebbles on beach at Marthas Vineyard, Massachusetts, and at Newport, etc., Rhode Island; also pebbles in Carboniferous conglomerate north of Fall River, Bristol County, Massachusetts.

Holotype and *paratypes.*—Cat. No. 27337, U.S.N.M.

Obolus rotundatus (Walcott).

Obolus (Lingulella) rotundatus Walcott, Proc. U. S. Nat. Mus., 21, 1898, p. 415.

Obolus (Lingulella) desideratus Walcott, Mon. U. S. Geol. Surv., 32, pt. 2, 1899, pp. 445–446, pl. 60, fig. 2a (not fig. 2).

Obolus rotundatus Walcott, Mon. U. S. Geol. Surv., 51, 1912, p. 411, pl. 20, figs. 2, 2a–e.

Lower Ordovician: Schellbourne, Schell Creek Range, White Pine County, Nevada. Also Upper and Middle Cambrian of Nevada, Montana, etc.

Holotype and *paratypes.*—Cat. No. 27337, 27338, U.S.N.M.

Obolus (Bröggeria) salteri (Holl).

Obolella salteri Holl, Quart. Jour. Geol. Soc. London, 21, pt. 1, 1865, p. 102, figs. 9a–b.—Davidson, British Foss. Brach., 3, pt. 7, 1866, pp. 61–62, pl. 4, figs. 28, 29.

Obolus (Bröggeria) salteri Walcott, Proc. U. S. Nat. Mus., 1902, 25, pp. 605–606; Mon. U. S. Geol. Surv., 51, 1912, p. 424, pl. 13, figs. 1a–n; pl. 15, figs. 4a–d.

Obolus (Bröggeria) salteri—Continued.

Lower Ordovician: Ceratopyge limestone, near Christiania, Norway; Bronsil shales, Worcestershire, etc., England; Dictyonema slate of Sweden.

Canadian (Bretonian—Div. C.3a): Various localities in Eastern Cape Breton, Nova Scotia.

Obolus (Lingulobolus) spissus (Billings).

Lingulella? spissa Billings, CanadianNat., 2d ser., 6, 1872, pp. 468–469, figs. 5a–c, p. 467; Geol. Surv. Canada, Pal. Foss., 2, pt. 1, 1874, pp. 67–68, figs. 36a—c, p. 66; Geol. Surv. Newfoundland, Rep. Prog., 1881, App., 1882, p. 15, pl. 3, figs. 12a–c.

Sphærobolus spissus Matthew, Trans. Roy. Soc. Canada, 2d ser., 1, 1895, pp. 263–266, pl. 1, figs. 5a–c.—Grabau, Occas. Papers Boston Soc. Nat. Hist., 1, pt. 3, 1900, p. 622.

Obolus (Lingulobolus) spissus Walcott, Amer. Jour. Sci., 4th ser., 6, 1898, p. 327; Mon. U. S. Geol. Surv., 51, 1912, p. 432, pl. 16, figs. 2a–k; pl. 42, figs. 3, 3a.

Lower Ordovician: One mile north of Lance Cove, Great Bell Island, Conception Bay, New Foundland.

Also limestone pebbles in Carboniferous conglomerate, north of Fall River, Bristol County, Massachusetts.

Plesiotypes.—Cat. No. 51678, U.S.N.M.

Obolus (Westonia) stoneanus (Whitfield).

Lingula aurora var. Hall, 16th Ann. Rep. New York State Cab. Nat. Hist., 1863, pp. 127, 128, pl. 6, figs. 6–8; Trans. Albany Inst., 5, 1867, pp. 104–106, pl. 1, figs. 6–8; 23d Ann. Rep. New York State Cab. Nat. Hist., 1873, pp. 244–245, pl. 13, fig. 5.

Lingulella stoneana Whitfield, Geol. Wisconsin, 1882, 4, p. 344, pl. 27, figs. 6, 7.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pl. 2, figs. 9–11.—Weller, Geol. Surv. New Jersey, Rep. Pal., 3, 1903, p. 112, pl. 1, fig. 6.

Obolus (Westonia) stoneanus Walcott, Proc. U. S. Nat. Mus., 23, 1901, p. 691; U. S. Geol. Surv., Mon. 51, 1912, p. 465, pl. 28, figs. 2, 2a–g; pl. 49, figs. 2, 2a.

Upper Cambrian: Wisconsin and New Mexico.

Upper Cambrian or Ozarkian (Kittatinny): Newton, Sussex County, New Jersey.

OCTONARIA Jones. Genotype: O. octoformis Jones.

Octonaria Jones, Ann. Mag. Nat. Hist., 5th ser., 19, 1887, p. 404.—Miller, N. A. Geol. Pal., 1st App., 1892, p. 709.—Ulrich, Zittel-Eastman Textb. Pal., 1900, p. 645.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 350.—Bassler, Zittel-Eastman Textb. Pal., 2d ed., 1913, p. 739.

Octonaria? angulata Ulrich and Bassler.

Octonaria? angulata Ulrich and Bassler, Maryland Geol. Surv., Low. Dev., 1913, p. 537, pl. 98, figs. 9–11.

Helderbergian (Keyser): Cumberland, Maryland; Keyser, West Virginia.

Holotype.—Cat. No. 53280, U.S.N.M.

Octonaria curta Ulrich.

Octonaria curta Ulrich, Jour. Cincinnati Soc. Nat. Hist., 13, 1891, p. 195, pl. 12, figs. 4a, 4b.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 351, figs. 1666, 1, 1′.

Clinton (Rochester): Lockport, New York.

Holotype.—Cat. No. 41674, U.S.N.M.

Octonaria inæqualis Ulrich and Bassler.
Octonaria inæqualis Ulrich and Bassler, Maryland Geol. Surv., Low. Dev., 1913, p. 538, pl. 98, figs. 12–18.
Helderbergian (Keyser): Cumberland, Maryland.
Cotypes: Cat. No. 53284, U.S.N.M.

Octonaria simplex (Krause).
Thlipsura simplex Krause, Zeits. deutsch. geol. Gesell., 43, p. 508, 1891, pl. 32, fig. 16.
Octonaria simplex Ulrich and Bassler, Maryland Geol. Surv., Low. Dev., 1913, p. 538, pl. 93, fig. 19.
Helderbergian (Keyser): Cumberland, Maryland.
Plesiotype.—Cat. No. 53285, U.S.N.M.

ODONTOCAULIS Lapworth. Genotype: Odontocaulis keepingi Lapworth.
Odontocaulis Lapworth, Quart. Jour. Geol. Soc. London, 37, 1881, p. 176, pl. 7, figs. 7a, b.—Pocta, Syst. Sil. Centre Boheme, 8, pt. 1, 1894, p. 171.—Ruedemann, Mem. New York State Mus., 11, pt. 2, 1908, p. 172.

Odontocaulis granti (Spencer).
Callograptus granti Spencer, Canadian Nat., 10, 1882, p. 165 (nom. nud.); Trans. Acad. Sci. St. Louis, 4, 1884, pp. 564, 571, 572, pl. 1, fig. 10; Bull. Mus. Univ. State Missouri, 1, 1884, pp. 14, 21, 22, pl. 1, figs. 10, 10a.—Gurley, Jour. Geol., 4, 1896, pp. 93, 308.
Odontocaulis granti Bassler, Bull. U. S. Nat. Mus. 65, 1909, p. 42, figs. 53, 54.
Niagaran dolomite: Hamilton, Ontario.

Odontocaulis hepaticus Ruedemann.
Odontocaulis hepaticus Ruedemann, Mem. New York State Mus., 11, pt. 2, 1908, pp. 174, 175, pl. 1, figs. 6, 7, text figs. 79–81.
Chazyan: Glenmont, Albany County, New York (Normanskill); Arkansas (Stringtown).

Odontocaulis obpyriformis Gurley.
Odontocaulis obpyriformis (Gurley MS.) Bassler, Bull. U. S. Nat. Mus., 65, 1909, pp. 43, 44, fig. 55.
Niagaran dolomite: Hamilton, Ontario.

Odontocaulis occidentalis Gurley.
Odontocaulis occidentalis (Gurley MS.) Bassler, Bull. U. S. Nat. Mus., 65, 1909, p. 44, fig. 56.
Niagaran dolomite: Hamilton, Ontario.

ODONTOPLEURA Emmrich. Genotype: O. ovata Emmrich.
Odontopleura Emmrich, De Tril. Dissertatio, etc., 1839, p. 53.—Burmeister, Org. der Tril., Berlin, 1843, p. 71.—Goldfuss, Neues Jahrb. Min., etc., 1843, pp. 541, 556.—Beyrich, Untersuchungen uber Tril., 1846, p. 16.—Emmrich, Neues Jahrb. f. Min., etc., 1846, p. 44.—Hawle and Corda, Abh. d. k. bohmischen Gesell. d. Wiss., 5 (extract, 1847), p. 147, pl. 7, fig. 28.—Clarke, 10th Rep. State Geol. New York for 1890, 1891, pp. 64, 67; 44th Rep. New York State Mus., 1892, pp. 94, 97.—Etheridge and Mitchell, Proc. Linnean Soc. New South Wales, 21, 1897, p. 695.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 313.—Raymond, Zittel-Eastman Textb. Pal., 1913, p. 722.

Odontopleura arkansana Van Ingen.
Odontopleura arkansana Van Ingen, School of Mines Quart., 23, 1901, p. 40, fig. 9, pl. fig. 2.
Niagaran (St. Clair): St. Clair Springs, Independence County, Arkansas.

Odontopleura crosota (Locke).

Ceraurus crosotus Locke, Amer. Jour. Sci., 44, 1843, p. 346, fig.; ibid., 45, 1843, p. 222, figs. 2–4.

Acidaspis crosotus Gebhard, 9th Rep. New York State Cab. Hist., 1850, pp. 45, 46.—Meek, Geol. Surv. Ohio, Pal., 1, 1873, p. 165, pl. 14, figs. 10a, b.—Miller, Cincinnati Quart. Jour. Sci., 1, 1874, p. 129.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 1055, pl. 54, figs. 5, 5a.—Ruedemann, Bull. New York State Mus., 162, 1912, p. 119, pl. 9, figs. 4, 5.

Ceratocephala crosotus Vogdes, Proc. Acad. Nat. Sci. Philadelphia, 1877, p. 140.

Odontopleura crossota Clarke, 10th Rep. State Geol. New York for 1890, 1891, pp. 69, 71; 44th Rep. New York State Mus., 1892, pp. 99, 101.

Eden: Cincinnati, Ohio, and vicinity; Albany County, New York (Indian Ladder).

Odontopleura halli (Shumard).

Acidaspis halli Shumard, 1st and 2d Ann. Rep. Geol. Surv. Missouri, pt. 2, 1855, p. 200, pl. B, fig. 7a–c.—Keyes, Missouri Geol. Surv., 4, 1894, p. 230, pl. 32, fig. 4.—Savage, Bull. Geol. Surv. Illinois, 23, 1913, p. 59, pl. 2, figs. 11 and 12.

Ceratocephala Halli Vogdes, Proc. Acad. Nat. Sci. Philadelphia, 1877, p. 140.

Odontopleura Halli Clarke, 10th Rep. State Geol. New York for 1890, 1891, p. 71; 44th Rep. New York State Mus., 1892, p. 101.

Upper Medinan (Girardeau): Cape Girardeau, Missouri.

Odontopleura illinoisensis Weller.

Odontopleura illinoisensis Weller, Bull. Chicago Acad. Sci., Nat. Hist. Surv., 4, pt. 2, 1907, p. 253, pl. 23, figs. 5–6.

Niagaran (Racine): Near Joliet, Illinois.

Odontopleura onealli (Miller).

Acidaspis O'Nealli Miller, Cincinnati Quart. Jour. Sci., 2, 1875, p. 86, fig. 9; N. A. Geol. Pal., 1889, p. 526, fig. 953.

Odontopleura O'Nealli Clarke, 10th Rep. New York State Geol. for 1890, 1891, p. 71; 44th Rep. New York State Mus., 1892, p. 101 (gen. ref.).

Richmond (Waynesville): Near Lebanon, Ohio.

Odontopleura ortoni (Foerste).

Acidaspis ——— Foerste, Bull. Sci. Lab. Denison Univ., 1, 1885, p. 101, pl. 13, fig. 23.

Acidaspis ortoni Foerste, ibid., 2, pt. 1, 1887, p. 90, pl. 8, fig. 1; Geol. Surv. Ohio, 7, 1893, p. 522, pl. 25, fig. 23, pl. 27, fig. 1.

Odontopleura ortoni Van Ingen, School of Mines Quart., 23, 1901, p. 39.—Kindle and Breger, 28th Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1904, p. 481, pl. 24, figs. 16–19.

Upper Medinan (Brassfield): Near New Carlisle, Ohio.

Niagaran: St. Clair Springs, Independence County, Arkansas (St. Clair); Georgetown and Pendleton, Indiana.

Odontopleura parvula (Walcott).

Acidaspis parvula Walcott, 31st Rep. New York State Mus. Nat. Hist., 1880 (adv. sheets, 1877), p. 69.

Odontopleura parvula Clarke, 10th Rep. State Geol. New York for 1890, 1891, p. 71; 44th Rep. New York State Mus., 1892, p. 101; Geol. Minnesota, 3, pt. 2, 1894, p. 744, fig. 61.—Weller, Geol. Surv. New Jersey, Pal., 3, 1903, p. 201, pl. 15, figs. 21, 22.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 313, fig. 1624a.

Trenton: Trenton Falls, New York, St. Paul, Minnesota; Jacksonburg, New Jersey.

Odontopleura trentonensis (Hall).

Acidaspis trentonensis Hall, Pal. New York, 1, 1847, p. 240, pl. 64, figs. 4a-f.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 216, fig. 73.—Walcott, 28th Rep. New York State Mus. Nat. Hist., doc. ed., 1877, p. 89; ibid., mus. ed., 1879, p. 89; Bull. Mus. Comp. Zool., 8, 1881, p. 192; p. 206, pl. 3, fig. 2; 31st Rep. New York State Mus. Nat. Hist., 1879, p. 62.

Ceratocephala trentonensis? Vogdes, Proc. Acad. Nat. Sci. Philadelphia, 1877, p. 141.

Odontopleura Trentonensis Clarke, 10th Rep. State Geol. New York for 1890, 1891, p. 71; 44th Rep. New York State Mus., 1892, p. 101.

Trenton: Bay of Quinte, Lake Ontario, Canada.

ŒNONITES Hinde. Genotype: O. curvidens Hinde.

Œnonites Hinde, Quart. Jour. Geol. Soc. London, 35, 1879, p. 376.—Miller, N. A. Geol. Pal., 1889, p. 519.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 242.

Œnonites amplus Hinde.

Œnonites amplus Hinde, Quart. Jour. Geol. Soc. London, 35, 1879, p. 382, pl. 19, fig. 23.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 242, fig. 1532c.

Upper Medinan (Cataract): Toronto, Ontario.

Œnonites? carinatus Hinde.

Œnonites? carinatus Hinde, Quart. Jour. Geol. Soc. London, 35, 1879, p. 377, pl. 19, fig. 19.

Cincinnatian (Pulaski): Toronto, Ontario.

Œnonites cuneatus Hinde.

Œnonites cuneatus Hinde, Quart. Jour. Geol. Soc. London, 1879, p. 377, pl. 18, fig. 11—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 242, fig. 1526c.

Cincinnatian (Pulaski): Toronto, Ontario.

Œnonites curvidens Hinde.

Œnonites curvidens Hinde, Quart. Jour. Geol. Soc. London, 35, 1879, p. 376, pl. 18, fig. 7.

Cincinnatian (Pulaski): Toronto, Ontario.

Œnonites decipiens Foerste.

Œnonites decipiens Foerste, Amer. Geol., 2, 1888, p. 417, fig. 2; Geol. Surv. Ohio, Pal., 7, 1893, p. 517, fig. 2.

Richmond (Elkhorn): Todds Fork, near Wilmington, Ohio.

Œnonites fragilis Hinde.

Œnonites fragilis Hinde, Quart. Jour. Geol. Soc. London, 35, 1897, p. 382, pl. 20, fig. 3.

Upper Medinan (Cataract): Toronto, Ontario.

Œnonites inæqualis Hinde.

Œnonites inæqualis Hinde, Quart. Jour. Geol. Soc. London, 35, 1879, p. 376, pl. 18, fig. 8.

Cincinnatian (Pulaski): Toronto, Ontario

Œnonites? infrequens Hinde.

Œnonites? infrequens Hinde, Quart. Jour. Geol. Soc. London, 35, 1879, p. 382, pl. 20, fig. 2.

Upper Medinan (Cataract): Toronto, Ontario.

ŒNONITES MAJOR Hinde. See Eunicites major.

Enonites rostratus Hinde.

Œnonites rostratus Hinde, Quart. Jour. Geol. Soc. London, 35, 1879, p. 376, pl. 18, fig. 10.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 242, fig. 1526b.

Cincinnatian (Pulaski): Toronto, Ontario.

Enonites serratus Hinde.

Œnonites serratus Hinde, Quart. Jour. Geol. Soc. London, 35, 1879, p. 376, pl. 18, fig. 9.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 242, fig. 1526a.

Cincinnatian (Pulaski): Toronto, Ontario.

GYGIA BARRANDII Whitfield. See Ptychopyge barrandi.

GYGIA LATISSIMUS Eaton. See Homalonotus delphinocephalus.

GYGIA LIQUENSIS Hoek. See Hemigyraspis liquensis.

GYGIA? VETUSTA Hall. See Basilicus(?) vetustus.

GYGITES Tromelin and Lebesconte. Genotype: Ogygia guettardi Brongniart.

Ogygia (part) Brongniart, Hist. Nat. Crust. Foss., 1822, p. 26.

Ogygites Tromelin and Lebesconte (new name in place of Ogygia Brongniart, 1822, preoccupied by Hübner in 1816), Cat. Raisonné Foss. Sil., Assoc. French Avanc. Sci., Cong. Nantes, 1876, p. 631.—Raymond, Bull. Victoria Memorial Museum, 1, 1913, p. 43; Trans. and Proc. Roy. Soc. Canada, 5, 3d. ser., sec. 4, 1912, p. 115; Zittel-Eastman Textb. Pal., 1913, p. 719.

gygites canadensis (Chapman).

Asaphus canadensis Chapman, Canadian Jour., 1, 1856, p. 482; ibid., 2, 1858, p. 47; ibid., 3, 1858, pp. 231, 232, fig.; Ann. Mag. Nat. Hist., 3d ser., 3, 1858, pp. 10, 13, fig. 1; Canadian Jour., 4, 1859, p. 1, fig.; p. 142.—Billings, Geol. Canada, Geol. Surv. Canada, 1863, p. 204, fig. 201.—Chapman, Canadian Jour., n. s., 8, 1863, p. 29, fig. 141; p. 204, fig. 201; Expos. Min. and Geol., 1864, p. 136, fig. 141; p. 176, fig. 201.—Nicholson, Rep. Pal. Prov. Ontario, pt. 2, 1875, p. 40.—Walcott, Trans. Albany Inst., 10, 1883, pp. 3, 12 (loc. occ.).—Vogdes, Bull. U. S. Geol. Surv., 63, 1890, p. 92.

Basilicus canadensis Raymond, Amer. Jour. Sci., 19, 4th ser., 1905, p. 62 (gen. ref.).

Ogygites canadensis Raymond, Roy. Soc. Canada, Trans. Proc., 3d ser., 5, sec. 4, 1912, p. 118, pl. 1, fig. 2; Bull. Victoria Memorial Mus., 1, 1913, p. 43, pl. 6, fig. 1.

Asaphus halli Chapman, Ann. Nat. Hist., 3d ser., 3, 1858, p. 14, fig. 2; Canadian Jour., 2d. ser., 3, 1858, p. 236, fig.

Asaphus hincksii Chapman, Canadian Jour., Industry Sci. Arts., 4, 1859, p. 2, fig.; p. 140.—Billings (not Salter), Canadian Nat. Geol., 4, 1859, p. 70.

Trenton (Collingwood): Whitby, Collingwood, etc., Ontario.

Observation.—See also Asaphus latimarginatus Hall.

HIOCRINUS Wachsmuth and Springer. Genotype: Heterocrinus laxus Hall.

Ohiocrinus Wachsmuth and Springer, Proc. Acad. Nat. Sci. Philadelphia, 1886, p. 132, Rev. Pal., pt. 3, p. 208.—Miller, N. A. Geol. Pal., 1889, p. 263.—Wachsmuth and Springer, Proc. Acad. Nat. Sci. Philadelphia, 1890, pp. 378, 379.—Bather, Ann. Mag. Nat. Hist., ser. 6, 5, 1890, pl. 15, fig. 6; Kongl. Sv. Vet. Akad. Handl., 25, No. 2, 1893, p. 20.—Wachsmuth, Zittel-Eastman Textb. Pal., 1, 1900, p. 152.—Springer, Mem. Geol. Surv. Canada, 15P, 1911, p. 27; Zittel-Eastman Textb. Pal., 2d ed., 1913, p. 212.

Ohiocrinus bellevillensis (W. R. Billings).

Heterocrinus bellevillensis W. R. Billings, Trans. Ottawa Field Nat. Club, 1, 1883, p. 49, pl. figs.—Wachsmuth and Springer, Proc. Acad. Nat. Sci. Philadelphia, 1890, p. 392, pl. 10, fig. 8.—Bather, Geol. Mag., dec. 4, 6, p. 33, fig. 5; Treatise on Zool., pt. 3, Echinoderma, London, 1900, p. 146, fig. 58, 2.

Stenocrinus bellevillensis Wachsmuth and Springer, Proc. Acad. Nat. Sci. Philadelphia, 1886, p.[illegible]32 (Rev. Pal., pt. 3, sec 2, p. 208).

Ohiocrinus bellevillensis Springer, Mem. Geol. Surv. Canada, 15P, 1911, p. 26.

Trenton (Curdsville): Belleville and Kirkfield, Ontario.

Ohiocrinus compactus (Meek).

Heterocrinus constrictus var. compactus Meek, Geol. Surv. Ohio, Pal., 1, 1873, p. 4, pl. 1, fig. 11.

Ohiocrinus constrictus var. compactus Wachsmuth and Springer, Proc. Acad. Nat. Sci. Philadelphia, 1886, p. 133 (Rev. Pal., pt. 3, sec. 2, p. 209).

Ohiocrinus compactus Miller, N. A. Geol. Pal., 1889, p. 263, fig. 371.

Heterocrinus constrictus var. contractus Wachsmuth and Springer, Proc. Acad. Nat. Sci. Philadelphia, 1879, p. 293 (Rev. Pal., pt. 1, p. 70).

Heterocrinus isodactylus Miller, Cincinnati Quart. Jour. Sci., 2, 1875, p. 279, fig. 21.—Bather, Geol. Mag., dec. 4, 6, 1899, p. 41, footnote, fig. 17.

Maysville (Corryville): Cincinnati, Ohio, and vicinity.

Ohiocrinus constrictus (Hall).

Homocrinus constrictus Hall, 20th Rep. New York State Cab. Nat. Hist., 1867, p. 304 (nom. nud.).

Heterocrinus constrictus Hall, 24th Rep. New York State Cab. Nat. Hist., 1872, p. 210, pl. 5, figs. 13, 14 (adv. sheets, 1871).—Meek, Geol. Surv. Ohio, Pal., 1, 1873, p. 3, pl. 1, figs. 10a, b (and 11?).—Miller, Jour. Cincinnati Soc. Nat. Hist., 7, 1884, p. 18, pl. 4, figs. 4a–b.

Ohiocrinus constrictus Wachsmuth and Springer, Proc. Acad. Nat. Sci. Philadelphia, 1886, p. 133 (Rev. Pal., pt. 3, sec. 2, p. 209).—Miller, N. A. Geol. Pal., 1889, p. 263, fig. 372.

Heterocrinus vaupeli Wetherby, Jour. Cincinnati Soc. Nat. Hist., 4, 1881, p. 82, pl. 2, figs. 1, 1a.

Ohiocrinus vaupeli Springer, Mem. Geol. Surv. Canada, 15P, 1911, p. 27 (gen. ref.).

Maysville (Corryville): Cincinnati, Ohio, and vicinity.

OHIOCRINUS CONSTRICTUS var. COMPACTUS Wachsmuth and Springer. See Ohiocrinus compactus.

Ohiocrinus exilis Foerste.

Ohiocrinus exilis Foerste, Jour. Cincinnati Soc. Nat. Hist., 21, 1914, p. 125, pl. 1, fig. 7.

Trenton (Upper): Near Rogers Gap, Kentucky.

Ohiocrinus laxus (Hall).

Homocrinus laxus Hall, 20th Rep. New York State Cab. Nat. Hist., 1867, p. 304 (nom. nud.).

Heterocrinus laxus Hall, 24th Rep. New York State Cab. Nat. Hist., 1872, p. 211, pl. 5, fig. 15 (adv. sheets, 1871).—Meek, Geol. Surv. Ohio, Pal., 1, 1873, p. 14, pl. 1, figs. 8a, b.

Ohiocrinus laxus Wachsmuth and Springer, Proc. Acad. Nat. Sci. Philadelphia, 1886, p. 133 (Rev. Pal., pt. 3, sec. 2, p. 209).

Heterocrinus (Iocrinus) œhanus Ulrich, Jour. Cincinnati Soc. Nat. Hist., 5, 1882, p. 175, pl. 5.

Ohiocrinus laxus—Continued.
Heterocrinus œhanus Miller, Cat. Amer. Pal. Foss. (ed. 2), 1883, p. 283.
Ohiocrinus œhanus Wachsmuth and Springer, Proc. Acad. Nat. Sci. Philadelphia, 1886, p. 133 (Rev. Pal., pt. 3, sec. 2, p. 209).
Maysville (Fairmount): Cincinnati, Ohio, and vicinity.
Plesiotype.—Cat. No. 42304, U.S.N.M. (*cotype* of H. œhanus).

OHIOCRINUS ŒHANUS Wachsmuth and Springer. See Ohiocrinus laxus.

OHIOCRINUS VAUPELI Springer. See Ohiocrinus constrictus.

OLDHAMIA Forbes. Genotype: O. radiata Forbes.
Oldhamia Forbes, Jour. Geol. Soc. Dublin, 4, 1848, p. 20.

OLDHAMIA FRUTICOSA Hall. See Chætomorpha? prima and Callithamnopsis fruticosa.

Oldhamia (Murchisonites) occidens Walcott.
Oldhamia (Murchisonites) occidens Walcott, Proc. U. S. Nat. Mus., 17, 1894, p. 314, fig. 1.—Ruedemann, Bull. New York State Mus., 133, 1909, p. 210, fig. 14.
Upper Cambrian or Lower Ordovician: Nassau Township, Rensselaer County, New York.
Cotypes.—Cat. No. 33669, U.S.N.M.

OLENUS ARCUATUS Goldfuss. See Triarthrus becki.

OLENUS (PARABOLINELLA) LIMITIS Brögger. See Parabolinella limitis.

OLENUS? LOGANI Devine. See Loganellus logani.

OLENUS (SPHÆROPHTHALMUS) PECTEN Salter. See Ctenopyge pecten.

OLENUS (PARABOLINA) SPINULOSA Salter. See Parabolina spinulosa.

OLENUS TRIARTHRUS Goldfuss. See Triarthrus becki.

OLENUS UNDULOSTRIATUS Hall. See Proetus undulostriatus.

OMOSPIRA Ulrich. Genotype: O. laticincta Ulrich.
Murchisonia (part) Hall, Salter and Billings
Omospira Ulrich, Geol. Minnesota, 3, pt. 2, 1897, pp. 932-944.—Koken, Neues Jahrb. Min., Geol. Pal., 1, 1898, p. 15.
Ormospira Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 631.

Omospira alexandra (Billings).
Murchisonia ventricosa Salter (not Hall, 1847), Can. Org. Rem., Geol. Surv. Canada, dec. 1, 1859, p. 23; pl. 5, figs. 2, 2a, 3.
Murchisonia Alexandra Billings, Geol. Surv. Canada, Pal. Foss., 1, 1865, p. 172.
Omospira alexandra Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 946, pl. 70, figs. 66 and 67.
Ormospira alexandra Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 631, fig. 854d.
Black River (Leray): Pauquette's Rapids, Ottawa River, Canada; Mercer County, Kentucky.
Plesiotypes.—Cat. Nos. 45943, 45944, U.S.N.M.

Omospira laticincta Ulrich.
Omospira laticincta Ulrich, Geol. Minnesota, 3, pt. 2, 1897, p. 945, pl. 70, figs. 64, 65.

Omospira laticincta—Continued.
Ormospira laticincta Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 631, fig. 854b, c.
Scalites laticinctus Miller, N. A. Geol. Pal., 2d App., 1897, p. 770 (gen. ref.).
Black River (Lowville): Near Lebanon, Tennessee.
Holotype.—Cat. No. 45945, U.S.N.M.

OMPHALOTROCHUS Lindstrom. See Poleumita Clarke and Ruedemann.

OMPHYMA Rafinesque and Clifford. Genotype: O. (Madrepora) turbinata Fought.
Omphyma Rafinesque and Clifford, Ann. Sci. Phys. Bruxelles, 5, 1820, p. 234.—Edwards and Haime, Mon. d. Polyp. Foss. d. Terr. Pal., 1851 (Arch. Mus. Hist. Nat., 5), pp. 168, 400.—Pictet, Traité de Pal., 2d ed., 4, 1857, p. 456.—Milne-Edwards, Hist. Nat. Corall., 3, 1860, p. 394.—Lindstrom, Geol. Mag., 3, 1866, p. 359 (obiter), 411.—Salter, Cat. Camb. Sil. Foss., 1873, p. 113, 75.—Dybowski, Archiv. f. Naturf. Liv-, Ehst- und Kurl., 5, 1873, p. 337.—Rominger, Geol. Surv. Michigan, 3, pt. 2, 1876, p. 117.—Zittel, Handb. Pal., 1, Munich, 1879, p. 230.—Roemer, Leth. geog., pt. 1, Leth. Pal., 1883, p. 341.—Miller, N. A. Geol. Pal., 1889, p. 198.—Sherzer, Amer. Geol., 7, 1891, pp. 290-295; Bull. Geol. Soc. Amer., 3, 1892, p. 277.—Nicholson, Rec. Geol. Surv. N. S. Wales, 4, 1894, p. 15.—Koken, Die Leitfossilien, Leipzig, 1896, p. 309.—Zittel-Eastman Textb. Pal., 1, 1900, p. 77; ibid., 2d ed., 1913, p. 85.—Lambe, Cont. Can. Pal., Geol. Surv. Canada, 4, pt. 2, 1901, p. 177.—Pocta, Syst. Sil. du Centre Boheme, 8, pt. 2, 1902, p. 137.

Omphyma congregata Billings.
Omphyma congregata Billings, Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 93.
Niagaran: Huronia Point, Cockburn Island, Lake Huron.

OMPHYMA DRUMMONDI Billings. See Omphyma verrucosa.

Omphyma eriphyle (Billings).
Cyathophyllum Eriphyle Billings, Pal. Foss., Geol. Surv. Canada, 1, 1865, p. 111 (adv. sheets, 1862).
Omphyma Eriphyle Lambe, Ottawa Nat., 12, 1899, p. 243; Cont. Can. Pal., Geol. Surv. Canada, 4, pt. 2, 1901, p. 180, pl. 15, figs. 2, a, b.
?Omphyma subturbinata Milne-Edwards and Haime, British Foss. Corals, 1855, p. 288, pl. 68, figs. 1a-c.
Silurian: L'Anse a la Vieille, Bay of Chaleurs, Quebec.

OMPHYMA STOKESI Whitfield. See Ptychophyllum stokesi.

OMPHYMA SUBTURBINATA Milne-Edwards and Haime. See Omphyma eriphyle.

Omphyma verrucosa Rafinesque and Clifford.
Omphyma verrucosa Rafinesque and Clifford, Ann. des Sci. Phys. Bruxelles, 5, 1820, p. 125.—Edwards and Haime, Mon. d. Polyp. Foss. d. Terr. Pal., 1851 (Arch. du Mus. d'Hist. Nat., 5), p. 403.—Milne-Edwards, Hist. Nat. Corall., 3, 1860, p. 397.—Rominger, Geol. Surv. Michigan, 3, pt. 2, 1876, p. 118, pl. 44, lower tier.—Davis, Kentucky Fossil Corals, Geol. Surv. Kentucky, pt. 2, 1885, pl. 104, figs. 8-11; pl. 105, fig. 11.—Lambe, Cont. Can. Pal., Geol. Surv. Canada, 4, pt. 2, 1901, p. 178.
Omphyma Drummondi Billings, Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 93.

Omphyma verrucosa—Continued.

Zaphrentis Bigsbyi Billings, Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 92.

Niagaran: Drummond's Island and Cockburn Island, Lake Huron; Louisville, Kentucky (Louisville); West Tennessee (Brownsport).

ONCHOLICHAS Schmidt. See Arctinurus Castelnau.

ONCHOMETOPUS Schmidt. Genotype: O. volborthi Schmidt.

Onchometopus Schmidt, Mem. l'Acad. Imp. Sci. St. Petersburg, 8th ser., 6, 1898, pp. 11, 12, 28.—Raymond, Ann. Carnegie Mus., 7, 1910, p. 63; Trans. and Proc. Roy. Soc. Canada, 3d ser., 5, sec. 4, 1912, p. 115; Zittel-Eastman Textb. Pal., 1913, p. 719.

Onchometopus emoryi (Hall).

Asaphus emoryi Hall, Rep. U. S. Mexican Bound. Surv., Emory, 1857, pl. 20, fig. 5.

Isotelus Emoryi Walcott, Pal. Univ., 1st ser., fasc. 2, 1903, pl. 28.

Richmond: El Paso Texas.

Holotype.—Cat. No. 9824, U.S.N.M.

Onchometopus obtusus (Hall).

Asaphus? obtusus Hall, Pal. New York, 1, 1847, p. 24, pl. 4 (bis), fig. 14.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 236, pl. 3, fig. 14.

Isotelus obtusus Raymond, Ann. Carnegie Mus., 3, 1905, p. 344, pl. 12, figs. 1, 2.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 291.

Onchometopus obtusus Raymond, 7th Rep. Vermont State Geol., 1910, p. 22, pl. 34, figs. 1, 2; pl. 38, figs. 2–4; Ann. Carnegie Mus., 7, 1910, p. 64, pl. 18, figs. 2–4.—Perkins, Rep. Vermont State Geol., 8th ser., 1912, pl. 18, fig. 2–4.—Raymond, Trans. and Proc. Roy. Soc. Canada, 3d ser., 5, sec. 4, 1912, p. 120, pl. 3, fig. 2.

Chazyan (Day Point-Valcour): Chazy, Plattsburg, Valcour Island, etc., New York; Isle La Motte, Vermont.

Onchometopus simplex Raymond and Narraway.

Onchometopus simplex Raymond and Narraway, Ann. Carnegie Mus., 7, 1910, p. 51, pl. 16, figs. 6–8.

Black River: Straight River, Minnesota (Platteville); Franklin Forge, Pennsylvania.

Onchometopus susæ (Whitfield).

Asaphus Susæ (Calvin MS.) Whitfield, Geol. Wisconsin, 4, 1882, p. 236, pl. 5, fig. 3; pl. 10, fig. 8.—Chamberlin, Geol. Wisconsin, 1, 1883, p. 160, fig.

Asaphus (Isotelus) Susæ Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 3, 1897, p. 231.

Isotelus susæ Clarke, Geol. Minnesota, 3, pt. 2, 1894, p. 708, text figs. 10, 11.

Onchometopus susæ Raymond, Proc. and Trans. Roy. Soc. Canada, 3d ser., 5, sec. 4, 1912, p. 118, pl. 2, fig. 1.

Isotelus florencevillensis Calvin, Ann. Rept. Geol. Surv. Iowa, 13, 1903, p. 46.

Richmond: Apple River, Illinois; East Selkirk, Manitoba; Hader and Spring Valley, Minnesota; Iowa.

Plesiotypes.—Cat. Nos. 1176, 41902, U.S.N.M.

ONCHUS Agassiz. Genotype: O. murchisoni Agassiz.

Onchus Agassiz, Rech. Poissons Fossilse, 1837, p. 6. See Hay, Bull. U. S. Geol. Surv. No. 179, 1902, p. 326, for complete bibliography.

Onchus clintoni Claypole.

Onchus clintoni Claypole, Geol. Surv. Pennsylvania, Pref. to Rep. F 2, 1884, p. 12; Quart. Jour. Geol. Soc. London, 41, 1884, p. 61, fig. 6.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 495, figs.

Cayugan (New Bloomfield): Perry County, Pennsylvania.

ONCHUS DEWEYI Hall. See Ceratiocaris (Phasganocaris?) deweyi.

Onchus pennsylvanica Claypole.

Onchus pennsylvanicus Claypole, Geol. Surv. Pennsylvania, Pref. to Rep. F 2, 1884, p. 12; Quart. Jour. Geol. Soc. London, 41, 1884, p. 61, fig. 5.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 495, figs.

Cayugan (New Bloomfield): Perry County, Pennsylvania.

ONCOCERAS Hall. Genotype: O. constrictum Hall.

Oncoceras Hall, Pal. New York, 1, 1847, p. 196.—D'Orbigny, Prodr. de Pal., 1, 1849, p. 5.—Woodward, Man. Mollusca, pt. 1, 1851, p. 90.—Saemann, Palæontagraphica, 3, 1852, pp. 157, 162.—Pictet, Traite de Pal., 2d ed., 2, 1854, p. 646.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 148.—Hall, Rep. Geol. Surv. Wisconsin, 1861, p. 43.—Billings, Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 86.—Barrande, Syst. Sil. du Centre Boheme, 2, pt. 1, 1867, p. 450.—Hyatt, Proc. Boston Soc. Nat. Hist., 22, 1884, p. 282.—Miller, N. A. Geol. Pal., 1889, p. 445.—Clarke and Ruedemann, Mem. New York State Mus., 5, 1903, p. 94.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 122.—Hyatt, Zittel-Eastman Textb. Pal., 1900, p. 530; 2d ed., 1913, p. 611.

Oncoceras abruptum Hall.

Oncoceras abruptum Hall, Rep. Supt. Geol. Surv. Wisconsin, 1861, p. 44.—Whitfield, Mem. Amer. Mus. Nat. Hist., 1, pt. 2, 1895, p. 68, pl. 10, figs. 1-3.

Black River (Platteville): Platteville and Beloit, Wisconsin.

Oncoceras alceus Hall.

Oncoceras alceus Hall, Rep. Sup. Geol. Surv. Wisconsin, 1861, p. 46.—Whitfield, Mem. Amer. Mus. Nat. Hist., 1, pt. 2, 1895, p. 70, pl. 9, figs. 23-26.

Black River (Platteville): Beloit, Wisconsin.

Oncoceras amator Billings.

Oncoceras amator Billings, Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 59.

Anticostian (Chicotte): Southwest Point, Anticosti.

Oncoceras arcticum Schuchert.

Oncoceras arcticum Schuchert, Proc. U. S. Nat. Mus., 22, 1900, p. 172, pl. 14, figs. 4-7.

Mohawkian: Head of Frobisher Bay.

Holotype.—Cat. No. 28196, U. S.N.M.

Oncoceras brevicurvatum Whitfield.

Oncoceras brevicurvatum Whitfield, Ann. Rep. for 1879, Wisconsin, Geol. Surv., 1880, p. 59; Geol. Wisconsin, 4, 1882, p. 234, pl. 7, fig. 2 (Cyrtoceras brevicurvatum on plate).—Chamberlin, Geol. Wisconsin, 1, 1883, p. 159, fig.

Black River (Platteville): near Beloit, Wisconsin.

Oncoceras carveri Clarke.

Oncoceras carveri Clarke, Geol. Minnesota, 3, pt. 2, 1897, p. 801, pl. 58, figs. 7-9.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 123, fig. 1366.

Black River (Platteville): Minneapolis, Minnesota; Rockton, Illinois.

ONCOCERAS CONSTRICTUM Billings. See Poterioceras apertum.

Oncoceras constrictum Hall.

Oncoceras constrictum Hall, Pal. New York, 1, 1847, p. 197, pl. 41, figs. 6a–f, 7a–d; 3d Rep. New York State Cab. Nat. Hist., rev. ed., 1850, p. 180, pl. 3, fig. 3, doc. ed., p. 172.—Emmons, Amer. Geol., 1, pt. 2, 1855, p. 148, pl. 12, fig. 2.—Miller, N. A. Geol. Pal., 1889, p. 445, fig. 748.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 494, fig.

Phragmoceras constrictum Chapman, Expos. Min., Geol. Canada, 1864, p. 131, fig. 134.

Poterioceras constrictum Foord, Cat. Foss. Ceph. British Mus., 1, 1888, p. 258.

Cyrtoceras constrictum Billings, Geol. Canada, Geol. Surv. Canada, 1863, p. 951 (gen. ref.).

Trenton: Middleville, Watertown, and Trenton Falls, New York.

Observation.—See Nelimenia incognita Castelnau.

Oncoceras douglassi Clarke.

Oncoceras douglassi Clarke, Geol. Minnesota, 3, pt. 2, 1897, p. 801, pl. 60, figs. 13–15.

Trenton (Prosser): Hader, Goodhue County, Minnesota.

Oncoceras exiguum (Billings).

Cyrtoceras exiguum Billings, Can. Nat. Geol., 5, 1860, p. 172, figs. 17–18; Geol. Canada, Geol. Surv. Canada, 1863, p. 150, fig. 109.

Clinoceras exiguum Schuchert, Proc. U. S. Nat. Mus., 22, 1900, p. 171.

Oncoceras exiguum Clarke, Geol. Minnesota, 3, pt. 2, 1897, p. 798, pl. 58, figs. 10, 11.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 124, fig. 1368.

Trenton: Near L'Original, Canada; Fountain, Minnesota; Baffin Land.

Oncoceras expansum Hall.

Oncoceras expansum Hall, Pal. New York, 2, 1852, 2, p. 337, pl. 77A, figs. 2a, b.

Cayugan (Cobleskill): Schoharie, New York.

Oncoceras fragile (Billings).

Cyrtoceras fragile Billings, Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 59.

Gamachian (Ellis Bay): Gamache Bay, Anticosti.

Oncoceras futile Billings.

Oncoceras futile Billings, Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 59.

Anticostian (Jupiter River): East of Jupiter River, Anticosti.

Oncoceras gibbosum Hall.

Oncoceras gibbosum Hall, Pal. New York, 2, 1852, p. 13, pl. 4 (bis.), figs. 6a, b, c.

Upper Medinan: Lockport, New York.

ONCOCERAS GIBBOSUM Whiteaves. See Oncoceras whiteavesi.

Oncoceras huronense (Billings).

Cyrtoceras Huronense Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 176, text fig. 158a, b.

Black River: St. Joseph Island, Lake Huron.

Oncoceras lycus (Hall).

Orthoceras lycum Hall, Rep. Supt. Geol. Surv. Wisconsin, 1861, p. 45.

Oncoceras lycus Whitfield, Mem. Amer. Mus. Nat. Hist., 1, pt. 2, 1895, p. 69, pl. 9, figs. 13, 14.—Clarke, Geol. Minnesota, 3, pt. 2, 1897, p. 799, pl. 58, figs. 1-3.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 123, fig. 1365.

Black River (Platteville): Janesville, Wisconsin; Preston and Minneapolis, Minnesota.

Oncoceras magnum Whiteaves.

Oncoceras magnum Whiteaves, Trans. Royal Soc. Canada, 7, sec. 4, 1890, p. 79, pl. 15, fig. 1; Pal. Foss., Geol. Surv. Canada, 3, pt. 3, 1897, p. 220.

Black River or Richmond: East Selkirk, Manitoba.

Oncoceras magnum intermedium Whiteaves.

Oncoceras (magnum? var.) intermedium Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 3, 1897, p. 221, fig. 13.

Black River or Richmond: Little Black Island, Lake Winnipeg, Manitoba.

ONCOCERAS MANITOBENSE Clarke. See Cyrtoceras manitobense.

Oncoceras minnesotense Clarke.

Oncoceras minnesotense Clarke, Geol. Minnesota, 3, pt. 2, 1897, p. 798, pl. 58, figs. 16–18; fig. 10.

Trenton (Prosser): Hader, Stewartville, etc., Minnesota.

ONCOCERAS MUMIAFORME Whitfield. See Clinoceras mumiaforme.

Oncoceras orcas (Hall).

Cyrtoceras orcas Hall, Rep. Sup. Geol. Surv. Wisconsin, 1862, p. 43.

Oncoceras Orcas Chamberlin, Geol. Wisconsin, 1, 1883, p. 194, fig.—Hall, 20th Rep. New York State Cab. Nat. Hist., 1868 (extras, 1865), p. 350, pl. 17 (8), figs. 1, 2; rev. ed., 1870, p. 410, pl. 17, figs. 1, 2.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 124, fig. 1369.

Niagaran (Racine): Racine and Waukesha, Wisconsin.

Oncoceras ovoides Hall.

Oncoceras ovoides Hall, Pal. New York, 3, 1859, p. 342, pl. 69, figs. 2a, 2b.

Cayugan (Manlius): Herkimer County, New York.

Oncoceras pandion Hall.

Oncoceras pandion Hall, Rep. Supt. Geol. Surv. Wisconsin, 1861, p. 45; ibid., 1862, p. 41, fig. 3.—Whitfield, Geol. Wisconsin, 4, 1882, p. 233, pl. 7, fig. 6.—Chamberlin, Geol. Wisconsin, 1, 1883, p. 159, fig.—Whitfield, Mem. Amer. Mus. Nat. Hist., 1, pt. 2, 1895, p. 69, pl. 9, figs. 20–22.—Clarke, Geol. Minnesota, 3, pt. 2, 1897, p. 802, pl. 58, figs. 4–6.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 123, fig. 1367.

Black River (Platteville): Beloit and Janesville, Wisconsin; Cannon Falls, Minnesota.

Oncoceras pettiti Billings.

Oncoceras Pettiti Billings, Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 86, fig. 26.

Niagaran (Lockport): Grimsby, Ontario.

Oncoceras plebeium Hall.

Oncoceras plebeium Hall, Rep. Sup. Geol. Surv. Wisconsin, 1861, p. 44.—Whitfield, Mem. Amer. Mus. Nat. Hist. 1, pt. 2, 1895, p. 68, pl. 9, figs. 15–19.

Black River (Platteville): Beloit, Wisconsin.

Oncoceras pristinum Ruedemann.

Oncoceras pristinum Ruedemann, Bull. New York State Mus., 90, 1906, p. 503, pl. 34, figs. 1, 2.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 122, fig. 1364.

Chazyan (Valcour): Chazy and Plattsburg, New York.

Oncoceras subrectum Hall.
Oncoceras subrectum Hall, Pal. New York, 2, 1852, p. 94, pl. 28, figs. 11a, b.
Lower Clinton: Lockport, New York.

Oncoceras teucer Billings.
Oncoceras Teucer Billings, Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 86, fig. 25.
Niagaran (Lockport): Grimsby, Ontario.

Oncoceras thales Billings.
Oncoceras Thales Billings, Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 87.
Niagaran (Lockport): Grimsby, Ontario.

ONCOCERAS TRENTONENSE Lesley. See Cyrtoceras trentonense.

Oncoceras tumidum Schuchert.
Oncoceras tumidum Schuchert, Proc. U. S. Nat. Mus., 22, 1900, p. 172, pl. 14, figs. 1-3.
Mohawkian: Head of Frobisher Bay, Baffin Land.
Cotypes.—Cat. No. 28120, U.S.N.M.

Oncoceras vasiforme Dwight.
Oncoceras vasiforme Dwight, Amer. Jour. Sci. Arts, 3d ser., 27, 1884, p. 257, pl. 7, figs. 10, 10a.
Canadian (Beekmantown): Rochdale, New York.

Oncoceras whiteavesi Miller.
Oncoceras gibbosum Whiteaves (not Hall, 1847), Trans. Roy. Soc. Canada, 7, sec. 4, 1890, p. 80, pl. 15, figs. 2, 3.
Oncoceras whiteavesi Miller, N. A. Geol. Pal., 1st App., 1892, p. 697.—Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 3, 1897, p. 222.
Black River or Richmond: Lake Winnipeg, Manitoba.

ONYCHOPTERUS Clarke and Ruedemann. See Eurypterus subgenus Onychopterus.

OOCERAS Hyatt. Genotype: Cyrtoceras acinacies Barrande.
Oonoceras Hyatt, Proc. Boston Soc. Nat. Hist., 22, 1883, p. 280.
Ooceras Foord, Cat. Foss. Ceph. British Mus., 1, 1884, p. 262, footnote.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 125.—Hyatt, Zittel-Eastman Textb. Pal., 1900, p. 530; 2d ed., 1913, p. 610.

Ooceras kirbyi (Whitfield).
Cyrtoceras Kirbyi Whitfield, Bull. Amer. Mus. Nat. Hist., 2, 1889, p. 57, pl. 10, figs. 4-7.—Cleland, Bull. Amer. Pal., 3, 1900, p. 131 (259), pl. 17, figs. 3, 4.
Ooceras kirbyi Ruedemann, Bull. New York State Mus., 90, 1906, p. 495.
Canadian (Beekmantown): Beekmantown and Fort Hunter, New York.

Ooceras(?) lativentrum Ruedemann.
Ooceras(?) lativentrum Ruedemann, Bull. New York State Mus., 90, 14, 1906, p. 487, pl. 35, figs. 7-10, fig. 52.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 125, fig. 1370.
Chazyan (Valcour): Isle La Motte, Vermont; Valcour Island, New York.

Ooceras(?) perkinsi Ruedemann.
Ooceras(?) perkinsi Ruedemann, Bull. New York State Mus., 90, 1906, p. 499, pl. 34, figs. 4, 5, figs. 53-55.
Chazyan (Valcour): Isle La Motte, Vermont; Valcour Island and Chazy, New York.

Ooceras(?) raei (Whitfield).

Cyrtoceras raei Whitfield, Bull. Amer. Mus. Nat. Hist., 2, 1889, p. 58, pl. 10, figs. 8, 9.

Ooceras(?) raei Ruedemann, Bull. New York State Mus., 90, 1906, p. 496.

Canadian (Beekmantown): Beekmantown, New York.

Ooceras seelyi Ruedemann.

Ooceras seelyi Ruedemann, Bull. New York State Mus., 90, 1906, p. 496, pl. 38, figs. 7-11, fig. 51.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 125.

Chazyan (Valcour): Isle La Motte, Vermont; near Chazy and Plattsburg, New York.

OPHILETA (part) of authors. See Eccyliopterus Remele.

OPHILETA Vanuxem. Genotype: O. complanata Vanuxem.

Ophileta Vanuxem, Nat. Hist. New York, 3, 1842, p. 36.—Hall, Pal. New York, 1, 1847, p. 11.—Pictet, Traité de Pal., 2d ed., 3, 1855, p. 154.—Salter, Geol. Surv. Canada, dec. 1, 1859, pp. 10, 16.—Hitchcock, Geol. Vermont, 1, 1861, p. 271.—Koken, Neues Jahrb. Min., Geol. Pal., 6, Beilage-Band, 1889, p. 407; ibid., 1, 1898, p. 23.—Miller, N. A. Geol. Pal., 1889, p. 413.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 656.

Ophileta abdita Billings.

Ophileta abdita Billings, Pal. Fossils, 1, Geol. Surv. Canada, 1865, p. 189.

Canadian: Point Levis and Phillipsburg, Quebec.

Ophileta alturensis Sardeson.

Ophileta alturensis Sardeson, Bull. Minnesota Acad. Nat. Sci., 4, 1896, p. 98, pl. 5, figs. 3, 4.

Ozarkian (Oneota): Dresbach, Altura, and Mankato, Minnesota.

OPHILETA ANGULARIS Miller. See Ophiletina angularis.

Ophileta bella Billings.

Ophileta? bella Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 310, fig. 301a-c.—Koken, Neues Jahrb. Min., Geol. Pal., 6, Beilage-Band, 1889, p. 408.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 657, fig. 905.

Helicotoma uniangulata Billings, Canadian Nat. Geol., 4, 1859, p. 356 (loc. occ.).

Ophileta uniangulata Billings (not Hall), Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 246.

Canadian: Bedford, Stanbridge, etc., Quebec (Beekmantown): Cow Head, Newfoundland (Quebec—P).

Ophileta compacta Salter.

Ophileta compacta Salter, Quart. Jour. Geol. Soc. London, 15, 1859, p. 378, pl. 13, fig. 12.—Billings, Canadian Nat. Geol., 4, 1859, p. 356 (loc. occ.).—Salter, Geol. Surv. Canada, dec. 1, 1859, p. 16, pl. 3, figs. 1-3.—Chapman, Canadian Jour., n. s., 7, 1862, p. 120, fig. 121; ibid., 8, 1863, p. 190, fig. 158.—Billings, Geol. Canada, Geol. Surv. Canada, 1863, p. 102, figs. 9a, b; p. 115, figs. 23 a, b.—Chapman, Expos. Min. Geol. Canada, 1864, p. 124, fig. 121; p. 162, fig. 158.—Billings, Pal. Fossils, 1, Geol. Surv. Canada, 1865, p. 246.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 499, figs.—Keyes, Missouri Geol. Surv., 5, 1894, p. 162.

Canadian (Beekmantown): Beauharnois, near Montreal, Quebec, etc.

Observation.—See Ophileta complanata.

Ophileta complanata Vanuxem.

Ophileta complanata Vanuxem, Nat. Hist. New York, Geol., 3, 1842, p. 36, fig. 2.—Emmons, ibid., 2, 1842, p. 179, fig. 2.—Owen, Amer. Jour. Sci. Arts, 47, 1844, p. 357, 358, fig. 2.—Hall, Pal. New York, 1, 1847, p. 11, fig. 2, pl. 3, fig. 6.—Koken, Neues Jahrb. Min. Geol. Pal., 6, Beilage-Band, 1889, p. 477.—Whitfield, Bull. Amer. Mus. Nat. Hist., 2, 1889, p. 48, pl. 7, figs. 18–25.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 499, figs.—Cleland, Bull. Amer. Pal., 3, 1900, p. 124 (252).—Grabau and Shimer, N. A. Index Fossils, 1 (3), 1909, p. 656, fig. 904.—Bassler, Bull. Virginia Geol. Surv., 2a, 1909, pl. 3, figs. 1, 2.—Seely, Vermont State Geol. Rep., 7, 1910, pl. 60, figs. 1–3.—Cleland, Bull. Amer. Pal., 4, 1912, p. 15.

Straparollus complanatus Emmons, Amer. Geology, 1, pt. 2, 1855, p. 157, pl. 5, fig. 2.

Schizostoma complanatum Clarke and Ruedemann, Bull. New York State Mus., 65, 1903, p. 561 (gen. ref.).

Canadian (Beekmantown): Mohawk Valley, Beekmantown, etc., New York; Pennsylvania, Maryland, Virginia, etc.

Observation.—The above synonymy and also that of Ophileta compacta is in need of revision, as several generic types are embraced under O. compacta alone.

Ophileta complanata nana Meek.

Ophileta complanata var. nana Meek, U. S. Geol. Expl., 40th Paral., 4, 1877, p. 17, pl. 1, figs. 1a–b.

Canadian: Ute Peak, south of Muddy Creek of Bear River, Utah.

OPHILETA DISCUS Cleland. See Ophileta levata.

OPHILETA? DISJUNCTA Billings. See Eccyliopterus disjuncta.

Ophileta fausta Sardeson.

Ophileta fausta Sardeson, Bull. Minnesota Acad. Nat. Sci., 4, 1896, p. 75, pl. 3, figs. 8, 9.

St. Peter: Highland Park, Minnesota.

Ophileta levata Vanuxem.

Ophileta levata Vanuxem, Nat. Hist. New York, Geol. 3, 1842, p. 36, fig. 1.—Emmons, ibid., 2, 1842, p. 179, fig. 1.—Owen, Amer. Jour. Sci. Arts, 47, 1844, pp. 357, 358, fig. 1.—Hall, Pal. New York, 1, 1847, p. 11, fig. 1, pl. 3, figs. 4, 5.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 500, fig.—Cleland, Bull. Amer. Pal., 4, 1903, p. 16.

Ophileta discus Cleland, Bull. Amer. Pal., 3, 1900, p. 124 (252), pl. 15, figs. 5, 6.

Straparollus levatus Emmons, Amer. Geology, 1, pt. 2, 1855, p. 157, pl. 5, fig. 1.

Schizostoma levatum Clarke and Ruedemann, Bull. New York State Mus., 65, 1903, p. 561 (gen. ref.).

Canadian (Little Falls): Canajoharie, Tribes Hill, Little Falls, etc., New York.

Ophileta nerine Billings.

Ophileta Nerine Billings, Pal. Fossils, 1, Geol. Surv. Canada, 1865, p. 245, figs. 232a, b.—Miller, N. A. Geol. Pal., 1889, p. 414, fig. 689.

Canadian (Quebec—F): Bay of St. John, Newfoundland.

OPHILETA OTTAWAENSIS Billings. See Eccyliopterus ottawaensis.

OPHILETA OWENANA Meek and Worthen. See Eccyliopterus owenanus.

Ophileta profunda Billings.

Ophileta profunda Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 188.

Ozarkian? (Levis—erratics): Point Levis, Quebec.

OPHILETA SORDIDA Lesley. See Maclurites sordida.

OPHILETA SUBLAXA Miller. See Ophiletina sublaxa.

OPHILETA UNIANGULATA Billings. See Ophileta bella.

OPHILETINA Ulrich and Scofield. Genotype: O. sublaxa Ulrich and Scofield.
Ophiletina Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 1028.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 657.

Ophiletina angularis Ulrich and Scofield.
Ophiletina angularis Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 1031, pl. 74, figs. 43–46.
Ophileta angularis Miller, N. A. Geol. Pal., 2d App., 1897, p. 769 (gen. ref.).
Black River (Decorah): Near Cannon Falls, Minnesota.
Holotype.—Cat. No. 45946, U.S.N.M.

Ophiletina sublaxa Ulrich and Scofield.
Ophiletina sublaxa Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 1030, pl. 74, figs. 40–42 and 47.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 657, fig. 906a, b.
Ophileta sublaxa Miller, N. A. Geol. Pal., 2d App., 1897, p. 769 (gen. ref.).
Black River (Platteville): Minneapolis, Minnesota; Mineral Point, Wisconsin; Dixon, Illinois.
Cotypes.—Cat. No. 45947, U.S.N.M.

Ophiletina sublaxa depressa Ulrich and Scofield.
Ophiletina sublaxa var. depressa Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 1030, pl. 74, fig. 42.
Stones River (Murfreesboro): Murfreesboro, Tennessee.
Holotype.—Cat. No. 46070, U.S.N.M.

Ophiletina sublaxa sequens Ulrich and Scofield.
Ophiletina sublaxa var. sequens Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 1031.
Trenton (Prosser): Wykoff, Minnesota
Holotype.—Cat. No. 45948, U.S.N.M.

OPISTHOPTERA Meek.
Genotype: Ambonychia (Megaptera) casei Meek and Worthen.
Opisthoptera Meek, Proc. Acad. Nat. Sci. Philadelphia, 1872, p. 320, footnote; Geol. Surv. Ohio Pal., 1, 1873, p. 131, footnote.—White, Amer. Jour. Sci. Arts, 3d ser., 9, 1875, pp. 318–320.—Ulrich, Geol. Surv. Ohio, 7, 1893, p. 642.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 982.
Megaptera Meek and Worthen, Proc. Chicago Acad. Nat. Sci., 1, 1866, p. 22. (Not Megaptera Gray, 1846.)—White, Cincinnati Quart. Jour. Sci., 1, 1874, p. 326.—Zittel, Handb. Pal., 2, 1881, p. 36.

Opisthoptera alternata Ulrich.
Opisthoptera alternata Ulrich, Geol. Surv. Ohio, 7, 1893, p. 644, pl. 49, figs. 9–11.
Richmond (Waynesville): Waynesville, Ohio.
Cotypes.—Cat. No. 46262, U.S.N.M.

Opisthoptera ampla Ulrich.
Opisthoptera ampla Ulrich, Geol. Surv. Ohio, 7, 1893, p. 647, pl. 47, fig. 7.
Maysville (Fairmount): Cincinnati, Ohio.
Holotype.—Cat. No. 46263, U.S.N.M.

Opisthoptera casei (Meek and Worthen).
Ambonychia (Megaptera) casei Meek and Worthen, Proc. Chicago Acad. Sci., 1, 1866, p. 23; Geol. Surv. Illinois, 3, 1868, p. 337.
Opisthoptera casei Ulrich, Geol. Surv. Ohio, 7, 1893, p. 643, pl. 49, figs. 1-5.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 1011, pl. 47, figs. 1, 1a.
Richmond: Richmond, etc., Indiana (Whitewater); Waynesville and Clarksville, Ohio; near Lebanon, Kentucky.
Plesiotypes.—Cat. Nos. 46264, 46265, U.S.N.M.

Opisthoptera concordensis Foerste.
Opisthoptera concordensis Foerste, Bull. Sci. Lab. Denison Univ., 16, 1910, p. 70, pl. 1, fig. 9.
Richmond (Arnheim): East of Concord, Kentucky.

Opisthoptera extenuata Ulrich.
Opisthoptera extenuata Ulrich, Geol. Surv. Ohio, 7, 1893, p. 645, fig. 2a-d.
Richmond (Waynesville): Warren County, Ohio.
Holotype.—Cat. No. 46266, U.S.N.M.

Opisthoptera fissicosta (Meek).
Ambonychia (Megaptera) casei? Meek, Ohio Pal., 1, 1873, p. 133. (fissicosta suggested.)
Opisthoptera fissicosta Ulrich, Geol. Surv. Ohio, 7, 1893, p. 644, pl. 49, figs. 9 and 11; p. 645, fig.
Richmond (Waynesville): Waynesville, Clarksville, etc., Ohio.
Plesiotype.—Cat. No. 46267, U.S.N.M. (Ulrich).

Opisthoptera laticostata Ulrich.
Opisthoptera laticostata Ulrich, Geol. Surv. Ohio, 7, 1893, p. 646, pl. 47, fig. 6.
Richmond (Waynesville): Warren County, Ohio.
Holotype.—Cat. No. 46268, U.S.N.M.

Opisthoptera notabilis Ulrich.
Opisthoptera notabilis Ulrich, Geol. Surv. Ohio, 7, 1893, p. 648, pl. 49, fig. 16.
Maysville (Fairmount): Cincinnati, Ohio.
Holotype.—Cat. No. 46269, U.S.N.M.

Opisthoptera obliqua Ulrich.
Opisthoptera obliqua Ulrich, Geol. Surv. Ohio, 7, 1893, pl. 49, figs. 6-8.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 1012, pl. 47, figs. 2, 2b.
Richmond (Whitewater): Richmond, Indiana.
Holotype.—Cat. No. 46270, U.S.N.M.

ORBICULA? DEFORMATA Hall. See Archinacella deformata.

Orbicula? excentrica Emmons.
Orbicula excentrica Emmons, Amer. Geol., 1, pt. 2, 1855, p. 112, pl. 1, fig. 4.—Barrande, Bull. Soc. Geol. France, 2d ser., 18, 1861, p. 300, pl. 5, fig. 17.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 502, fig.—Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 277.
Crania excentrica Miller, N. A. Geol. Pal., 1889, p. 341.
Lower Martinsburg: Augusta County, Virginia.
Observation.—Probably an Archinacella.

ORBICULA? FILOSA Hall. See Schizocrania filosa.

ORBICULA LAMELLOSA Hall. See Orbiculoidea lamellosa.

ORBICULA PARMULATA Hall. See Orbiculoidea parmulata.

ORBICULA PRIMA Owen. See Obolus matinalis.

ORBICULA? SQUAMIFORMIS Hall. See Pholidops squamiformis.

ORBICULA? SUBTRUNCATA Hall. See Pholidops subtruncata.

ORBICULA TENUILAMELLATA Hall. See Schizotreta tenuilamellata.

ORBICULA TERMINALIS Emmons. See Trematis terminalis.

ORBICULA TRUNCATA Emmons. See Orbiculoidea lamellosa.

ORBICULOIDEA D'Orbigny. Genotype: Orbicula morrisi Davidson.

Orbiculoidea D'Orbigny, Compt. Rend. de l'Acad. Sci., 25, 1847, p. 269; Prodrome de Pal., 1, 1850, p. 44.—Davidson, British Foss. Brach., Pal. Soc., 1853, p. 129.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 200.—Pictet, Traite de Pal., 2d ed., 4, 1857, p. 70.—Davidson, Mon. British Sil. Brach. Pal. Soc., 1866, p. 72.—Dall, Bull. Mus. Comp. Zool., 3, 1871, p. 37; Amer. Journ. Conch., 7, 1871, p. 74.—Zittel, Handb. Pal., 1, 1880, p. 667.—Herrick, Bull. Sci. Lab. Denison Univ., 4, 1888, p. 12.—Miller, N. A. Geol. Pal., 1889, p. 356.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 125, fig. 64; p. 128, fig. 160; pp. 160, 168.—Beecher, Amer. Jour. Sci., 3d ser., 44, 1892, p. 148.—Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 363.—Beecher, Amer. Nat., 27, 1893, p. 600.—Hall and Clarke, 11th Ann. Rep. New York State Geol., 1894, p. 256.—Koken, Die Leitfossilien, Leipzig, 1896, p. 230, fig. 189, 3, 4.—Miller, N. A. Geol. Pal., 2d App., 1897, p. 761.—Grabau, Bull. Buffalo Soc. Nat. Sc., 6, 1899, p. 183.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 204.—Schuchert, Zittel-Eastman Textb. Pal., 1900, p. 310; ibid., 2d ed., 1913, p. 377.

Discina Hall (not Lamarck), Pal. New York, 3, 1859, p. 159; 16th Rep. New York State Cab. Nat. Hist., 1863, p. 130; 1867, p. 15.

ORBICULOIDEA CONICA Dwight. See Schizotreta conica.

ORBICULOIDEA FILOSA Emmons. See Schizocrania filosa.

Orbiculoidea harti Clarke.

Orbiculoidea Hartii Clarke, Arch. Mus. Nac. Rio de Janeiro, 10, author's Engl. ed., 1900, p. 7, pl. 1, figs. 5, 6.

Silurian: Rio Trombetas, Brazil.

Orbiculoidea lamellosa (Hall).

Orbicula lamellosa Hall (not Broderip, 1833), Pal. New York, 1, 1847, p. 99, pl. 30, fig. 10.

Orbiculoidea lamellosa Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pl. 4E, fig. 12.—Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 364, pl. 29, fig. 25.—Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 279.—Weller, Geol. Surv. New Jersey, Pal. 3, 1903, p. 147, pl. 9, figs. 1, 2.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 204.

Discina lamellosa Hitchcock, Geol. Vermont, 1, for 1861, 1862, p. 293, fig. 197.

Orbicula truncata Emmons, Amer. Geology, 3, 1855, p. 200, fig. 62.

Discinia truncata Emmons, Manual Geol., 1860, p. 99.

Discina circe Billings, Geol. Surv. Canada, Pal. Foss., 1, 1863, p. 51, fig. 55.—Miller, N. A. Geol. Pal., 1889, p. 344, fig. 561.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 209, fig.—Billings, Geol. Canada, 1863, p. 159, fig. 125.

Orbiculoidea lamellosa—Continued.
Trenton: Middleville, Lowville, etc., New York; Belleville and Ottawa, Ontario; Jacksonburg, New Jersey.
?Richmond (Maquoketa): Spring Valley, Minnesota.

Orbiculoidea numulus Hall and Clarke.
Orbiculoidea numulus Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 178, pl. 4E, fig. 14; 48th Rep. New York State Mus., 2, 1895, p. 333, pl. 2, fig. 11; 14th Rep. State Geol. New York for 1894, 1897, p. 333, pl. 2, fig. 11.
Cayugan (Manlius): Marshall, New York.

ORBICULOIDEA (SCHIZOTRETA) OVALIS Hall and Clarke. See Schizotreta ovalis.

Orbiculoidea parmulata (Hall).
Orbicula parmulata Hall, Geol. New York; Rep. 4th Dist., 1843, p. 48, fig. 4.—Owen, Amer. Jour. Sci. Arts, 48, 1845, p. 300, fig. 4.—Hall, Pal. New York, 2, 1852, pl. 4, fig. 3.
Discina parmulata Lincklaen, 14th Rep. New York State Cab. Nat. Hist., 1861, pl. 5, fig. 4.
Orbiculoidea parmulata Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 281.
Upper Medinan: Medina and Lockport, New York.

Orbiculoidea schucherti Swartz.
Orbiculoidea schucherti Swartz, Maryland Geol. Surv., Low. Dev., 1913, p. 292, pl. 53, figs. 6. 7.
Helderbergian (Keyser): Dawson, Maryland.

Orbiculoidea subplana (Hall).
Discina tenuilamellata var. subplana Hall. Canadian Nat. Geol., 5, 1860, p. 144.—Dawson, Acadian Geol., 3d ed., 1878, p. 595.
Orbiculoidea subplana Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 281.
Silurian: Arisaig, Nova Scotia.

ORBICULOIDEA (SCHIZOTRETA?) TENUILAMELLATA Hall and Clarke. See Schizotreta tenuilamellata.

Orbiculoidea tenuistriata (Ulrich).
Discina tenuistriata Ulrich, Jour. Cincinnati Soc. Nat. Hist., 1, 1878, p. 96, pl. 4, fig. 10.
Orbiculoidea tenuistriata Schuchert, Bull. U. S. Geol. Surv., 87, p. 281.—Ruedemann, Bull. New York State Mus., 162, 1912, p. 91, pl. 4, fig. 2.
Eden: Covington, Kentucky (Economy); Frankfort Gulf, New York (Frankfort).

Orbiculoidea truncata Emmons.
Orbiculoidea truncata Emmons, Amer. Geology, 1, pt. 2, 1855, p. 200, fig. 62.
Trenton: Middleville, New York.
Observation.—Not recognized. Probably a Shizotreta.

Orbiculoidea vanuxemi (Hall).
Discina vanuxemi Hall, Pal. New York, 3, 1859, p. 162, pl, 8, fig. 1.
Orbiculoidea vanuxemi Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 282.
Cayugan (Manlius): Manlius-square, New York.

ORBIGNYELLA Ulrich and Bassler.
Genotype: O. sublamellosa Ulrich and Bassler.
Orbignyella Ulrich and Bassler, Smiths. Misc. Coll. (quart. issue), 47, 1904, p. 18.—Bassler, Bull. U. S. Geol. Surv., 292, 1906, p. 26; Bull. U. S. Nat. Mus., 77, 1911, pp. 181, 182.
Monticulipora (part) Ulrich, Jour. Cincinnati Soc. Nat. Hist., 5, 1882, pp. 153, 232; Geol. Surv. Illinois, 8, 1890, pp. 370, 407.

Orbignyella billingsi (Foord).
Monticulipora Billingsi Foord, Contr. Micro-Pal. Cambro-Sil., 1883, p. 8, pl. 1, figs. 2–2c.
Orbignyella? billingsi Ulrich and Bassler, Smiths. Misc. Coll., 47, 1904, p. 19 (gen. ref.).
Trenton: Ottawa, Ontario.

Orbignyella expansa (Ringueberg).
Chætetes expansus Ringueberg, Bull. Buffalo Soc. Nat. Hist., 5, 1886, p. 20, pl. 2, fig. 17.
Orbignyella? expansus Ulrich and Bassler, Smiths. Misc. Coll., 47, 1904, p. 19 (gen. ref.).—Bassler, Bull. U. S. Geol. Surv. 292, 1906, p. 26, pl. 10, figs. 5–8.
Clinton (Rochester): Lockport, Niagara Gorge, and Rochester, New York; Grimsby, Ontario.
Plesiotypes.—Cat. No. 35541, U.S.N.M.

Orbignyella lamellosa (Ulrich).
Monticulipora lamellosa Ulrich, Geol. Surv. Illinois, 8, 1890, p. 408, pl. 32, figs. 4–4b.—J. F. James, Jour. Cincinnati Soc. Nat. Hist., 18, 1895, p. 83.
Orbignyella lamellosa Ulrich and Bassler, Smiths. Misc. Coll., Quart., 47, 1904, p. 20, pl. 6, fig. 10.
Richmond (Fernvale): Wilmington, Illinois.
Fragment of *holotype*.—Cat. No. 43303, U.S.N.M.

Orbignyella magnopora Bassler.
Orbignyella magnopora Bassler, Bull. U. S. Geol. Surv., 292, 1906, p. 27, pl. 10, figs. 9–12.
Clinton (Rochester): Grimsby, Ontario; Lockport and Rochester, New York.
Holotype.—Cat. No. 35537, U.S.N.M.

Orbignyella sublamellosa Ulrich and Bassler.
Orbignyella sublamellosa Ulrich and Bassler, Smiths. Misc. Coll., Quart., 47, 1904, p. 19, pl. 6, figs. 7–9.
Stones River (Pierce): Murfreesboro, Tennessee.
Holotype.—Cat. No. 43174, U.S.N.M.

Orbignyella wetherbyi (Ulrich).
Monticulipora wetherbyi Ulrich, Jour. Cincinnati Soc. Nat. Hist., 5, 1882, p. 239, pl. 10, figs. 4–4b; 14th Ann. Rep. Geol. Nat. Hist. Surv. Minnesota, 1886, p. 129.—James and James, Jour. Cincinnati Soc. Nat. Hist., 11, 1888, p. 24.—Ulrich, Contr. Micro-Pal. Cambro-Sil., pt. 2, 1889, p. 30; Geol. Minnesota, 3, 1893, p. 218, pl. 15, figs. 7, 8.—Whiteaves, Pal. Foss., 3, 1897, p. 162.
Orbignyella wetherbyi Ulrich and Bassler, Smiths. Misc. Coll., 47, 1904, p. 19 (gen. ref.).
Black River: High Bridge, Kentucky (Lowville); Minneapolis, Minnesota (Platteville); St. Andrews, Manitoba.
Cotypes.—Cat. No. 43690, U.S.N.M.

ORBITULITES RETICULATA Owen. See Ischadites iowensis.

ORIOSTOMA (part) Lindström. See Poleumita Clarke and Ruedemann.

ORMATHICHNUS Miller. Genotype: O. moniliformis Miller.
Ormathichnus Miller, Jour. Cincinnati Soc. Nat. Hist., 2, 1880, p. 222.—James, ibid., 8, 1885, pp. 160, 161.—Miller, N. A. Geol. Pal., 1889, p. 414.

Ormathichnus moniliformis Miller.
Ormathichnus moniliformis Miller, Jour. Cincinnati Soc. Nat. Hist., 2, 1884, p. 222, pl. 14, figs. 4, 5.
Eden (Economy): Walker Mill Road, Cincinnati, Ohio.

ORMOCERAS Stokes. See Actinoceras Bronn.

ORMOCERAS ANCEPS Chapman. See Gonioceras anceps.

ORMOCERAS BRONGNIARTI Owen. See Actinoceras richardsoni.

ORMOCERAS LYONI Hector. See Actinoceras bigsbyi.

ORMOCERAS MONILIFORME Hall. See Loxoceras moniliforme.

ORMOCRINUS Springer. Genotype: Centrocrinus tennesseensis Worthen.
Ormocrinus Springer, Mon. Crin. Flex., Smith. Inst. (in press).

Ormocrinus tennesseensis (Worthen).
Centrocrinus tennesseensis Worthen, Geol. Surv. Illinois, 8, 1890, p. 95, pl. 14, fig. 1.
Idiocrinus? tennesseensis Wachsmuth and Springer, Mem. Mus. Comp. Zool., Harvard, 20, 1897, p. 206, pl. 18, fig. 11.
Ormocrinus tennesseensis Springer, Mon. Crin. Flex., Smith. Inst. (in press).
Niagaran (Brownsport): Near Clifton, Wayne County, Tennessee.

ORMOSPIRA Grabau and Shimer. See Omospira Ulrich.

ORTHIDIUM Hall and Clarke. Genotype: Orthis gemmicula Billings.
Orthidium Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 244; 11th Ann. Rep. New York State Geol., 1894, p. 276.—Miller, N. A. Geol. Pal., 2d App., 1897, p. 762.

Orthidium gemmicula (Billings).
Orthis gemmicula Billings, Pal. Fossils, 1, Geol. Surv. Canada, 1865, p. 75, fig. 68 (adv. sheets 1862).
Orthidium gemmicula Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pp. 217, 244, pl. 7A, figs. 22–25.
Ozarkian ? (Levis—erratic): Point Levis, Quebec.

Orthidium lamellosum Raymond.
Orthidium lamellosa Raymond, Amer. Jour. Sci., 4th ser., 20, 1905, p. 371; Ann. Carnegie Mus., 7, 1911, p. 248, pl. 36, figs. 17, 18; fig. 24.
Chazyan (Crown Point, Valcour): Valcour and Sloop Islands, Chazy and Crown Point, New York.

ORTHIS Dalman (emend. Hall and Clarke). Genotype: O. calligramma Dalman
Orthis Dalman, Kongl. Svenska Vet. Akad. Handl., 1828, pp. 93, 96.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 192.—Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 417.—Hall and Clarke, 11th Ann. Rep. State Geol. Surv., 1894, p. 265.—Wysogorski, Zeit. d. d. geol. Gesell., 52, 1900, p. 225.—Grabau, Bull. New York State Mus., 9, 1901, p. 185; Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 185.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 250.—Schuchert, Zittel-Eastman Textb. Pal., 1900, p. 319; 2d ed., 1913, p. 381.
Orthis of authors.
Orthis Emmons, Amer. Geol., 1, pt. 2, 1855, p. 193.—Billings, Canadian Nat. Geol., 1, 1856, p. 133.—Pictet, Traite de Pal., 2d ed., 4, 1857, p. 55.—Chapman, Canadian Jour., n. s., 3, 1858, p. 160; ibid., 7, 1862, p. 111.—Hitchcock, Geol.

Orthis of authors—Continued.
Vermont, 1, 1862, p. 294.—Chapman, Expos. Min. Geol. Canada, 1864, p. 114.—Hall, Pal. New York, 4, 1867, p. 33.—Miller, Cincinnati Quart. Jour. Sci., 2, 1875, pp. 19, 20.—Winchell, 8th Ann. Rep. Geol. Nat. Hist. Surv. Minnesota, 1880, p. 63.—Zittel, Handb. Pal., 1, Munich, 1880, p. 674.—Shaler, Fossil Brachiopoda of Ohio Valley, 1887, p. 18.—Herrick, Bull. Sci. Lab. Denison Univ., 4, 1888, p. 14.—Nettelroth, Kentucky Foss. Shells, Mem. Geol. Surv. Kentucky, 1889, p. 34.—Hall, Bull. Geol. Soc. Amer., 1. 1889, p. 19.—Miller, N. A. Geol. Pal., 1889, p. 356.—Hall and Clarke, Pal New York, 8, pt. 1, 1892, pp. 185, 186; 11th Ann. Rep. New York State Geol., 1894, p. 264.—Koken, Die Leitfossilien, Leipzig, 1896, p. 235, figs. 195, 5.

ORTHIS (group of O. plicatella) Hall. See Plectorthis Hall and Clarke.

ORTHIS (group of O. testudinaria) Hall. See Dalmanella Hall and Clarke.

ORTHIS (ORUSIA) Walcott. See Eoorthis Walcott.

ORTHIS (PLECTORTHIS) Walcott. See Eoorthis Walcott.

ORTHIS (PLATYSTROPHIA) ACUMINATA James. See Platystrophia acuminata.

Orthis(?) acuminata Billings.
Orthis? acuminata Billings, Canadian Nat. Geol., 4, 1859, p. 440, fig. 19; Geol Canada, 1863, p. 130, fig. 59.—Lesley, Geol. Surv. Pennsylvania, Rep. P4, 1889, p. 507, figs.—Raymond, Ann. Carnegie Mus., 7, 1911, p. 246, fig. 21.
Chazyan (Aylmer): Caughnawaga, Canada.

ORTHIS (PLATYSTROPHIA) ACUTILIRATA Meek. See Platystrophia acutilirata.

ORTHIS ACUTILOBA Ringueberg. See Bilobites acutilobus.

Orthis acutiplicata Raymond.
Orthis acutiplicata Raymond, Amer. Jour. Sci., 20, 1905, p. 370; Ann. Carnegie Mus., 7, 1911, p. 237, pl. 35, figs. 8–10.
Chazyan (Day Point): Valcour Island, New York.

ORTHIS ÆQUIVALVA Shaler. See Rhipidomella uberis.

ORTHIS ÆQUIVALVIS Hall. See Plectorthis æquivalvis.

ORTHIS ALATA Shaler. See Orthis flabellites.

Orthis(?) alternans Castelnau. Not recognized.
Orthis alternans Castelnau, Essai Syst. Sil. l'Amerique Septentrionale, 1843, p. 38, pl. 14, fig. 2.
"Erratic block, Lake of the Woods."

ORTHIS AMŒNA Winchell. See Pianodema amœna.

ORTHIS ANNIEANA James. See Platystrophia annieana.

ORTHIS ANTICOSTIENSIS Shaler. See Dinorthis (Plæsiomys) porcata anticostiensis.

Orthis? apicalis (Billings).
Orthis? apicalis Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 301, fig. 291.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 217.—Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 283.
Ozarkian?: Point Levis (Levis-erratics) and Island of Orleans, Quebec.

ORTHIS (DALMANELLA) ARCUARIA Hall and Clarke. See Dalmanella arcuaria.

ORTHIS ARMANDA Billings. See Syntrophia? armanda.

ORTHIS (PLECTORTHIS) ATAVA Walcott. See Eoorthis atava.

ORTHIS BARABUENSIS Winchell. See Syntrophia barabuensis.

ORTHIS BATTIS Billings. See Hebertella battis.

ORTHIS BELLARUGOSA Conrad. See Hebertella bellarugosa.

ORTHIS BELLARUGOSA Hall. See Hebertella insculpta.

ORTHIS BELLULA Meek. See Pianodema bellula.

Orthis benedicti Miller.
Orthis benedicti Miller, 17th Rep. State Geol. Indiana, 1891, p. 78, pl. 13, figs. 7–9.
Niagaran (Waldron): Hartsville, Indiana.

ORTHIS BICOSTATUS Vanuxem. See Reticularia bicostata.

ORTHIS BIFORATA Nicholson. See Platystrophia lynx.

ORTHIS (PLATYSTROPHIA) BIFORATA Foerste. See Platystrophia daytonensis and P. reversata.

ORTHIS (PLATYSTROPHIA) BIFORATA var. ACUTILIRATA Lesley. See Platystrophia acutilirata.

ORTHIS (PLATYSTROPHIA) BIFORATA var. DENTATA Lesley. See Platystrophia crassa.

ORTHIS (PLATYSTROPHIA) BIFORATA var. LATICOSTATA Lesley. See Platystrophia laticosta.

ORTHIS (PLATYSTROPHIA) BIFORATA var. LYNX Meek. See Platystrophia lynx.

ORTHIS BIFORATA var. LYNX forma DAYTONENSIS Foerste. See Platystrophia daytonensis.

ORTHIS BIFORATA var. LYNX forma REVERSATA Foerste. See Platystrophia reversata.

ORTHIS BIFORATUS Billings. See Platystrophia biforata.

ORTHIS BILOBA Hall. See Bilobites bilobus.

ORTHIS BISULCATA Emmons. See Cyclospira bisulcata.

ORTHIS BOREALIS Meek. See Hebertella frankfortensis.

ORTHIS BOREALIS Billings. See Hebertella borealis.

Orthis callactis amazonica Clarke.
Orthis callactis var. amazonica Clarke, Arch. Mus. Rio de Janeiro, 10, author's Engl. ed., June, 1900, p. 9, pl. 1, figs. 17–21.
Silurian: Rio Trombetas, Brazil.

Orthis calligramma Kayser.
Orthis calligramma Kayser (not Davidson), Palæontographica, Suppl. 3, 1876, pp. 18, 26, pl. 3, figs. 9–18.
Ordovician: Cordillere San Juan, Argentina.
Observation.—These shells appear to be more closely related to O. plicatella than to O. calligramma (Schuchert).

ORTHIS CALLIGRAMMA Foerste. See Orthis flabellites.

ORTHIS CALLIGRAMMA var. DAVIDSONI Nicholson and Hinde. See Orthis davidsoni.

ORTHIS CALLIGRAMMA var. DINORTHIS Foerste. See Orthis flabellites dinorthis.

ORTHIS CALLIGRAMMA var. EUORTHIS Foerste. See Orthis flabellites euorthis.

ORTHIS (DINORTHIS) CALLIGRAMMA var. FISSIPLICATA Foerste. See Orthis flabellites fissiplicata.

ORTHIS CANALIS Hall. See Dalmanella elegantula.

Orthis carausii Salter.
Orthis carausii (Salter, MS.) Davidson, Geol. Mag. London, 5, 1868, p. 315, pl. 16, fig. 23.—Hoek, Neues Jahrb. Min. Geol., Pal., 34, 1912, p. 222.
Orthis carausii? Matthew, Trans. Royal Soc. Canada, 10, 1893, p. 102, pl. 7, fig. 7.
Lowest Ordovician: England; near St. John, New Brunswick (Bretonian—Div. C 3a); Bolivia.

ORTHIS CARLEYI Hall. See Dinorthis carleyi.

ORTHIS CENTRILINEATA Hall. See Dalmanella centrilineata.

ORTHIS CENTROSA Miller. See Platystrophia crassa.

ORTHIS CHARLOTTE Winchell. See Dinorthis pectinella.

ORTHIS CIRCULARIS Winchell. See Pianodema subæquata circularis.

ORTHIS CIRCULARIS Owen. See Rhipidomella circularis.

ORTHIS CIRCULUS Hall. See Rhipidomella circulus.

ORTHIS CINCINNATIENSIS Miller. See Orthis(?) pumila.

ORTHIS CLYTIE Hall. See Heterorthis clytie.

ORTHIS COLORADOENSIS Shumard. See Billingsella coloradoensis.

ORTHIS COLORADOENSIS Meek. See Eoorthis desmopleura.

ORTHIS CONCINNA Hall. See Dalmanella concinna.

ORTHIS CONRADI Winchell. See Pianodema subæquata conradi.

Orthis corinna Billings.
Orthis corinna Billings, Pal. Fossils, 1, Geol. Surv. Canada, 1865, p. 302, fig. 292.
Orthis? corinna Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 217.
Canadian (Beekmantown): Stanbridge, Quebec.

ORTHIS CORPULENTA Sardeson. See Dalmanella corpulenta.

Orthis costalis Hall.
Orthis costalis Hall, Pal. New York, 1, 1847, p. 20, pl. 4, fig. 4a (not 4b–4c); 2d Ann. Rep. New York State Geol., 1883, pl. 34, fig. 35.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pp. 221, 228, pl. 5, figs. 16–17.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 512, figs.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 250, fig. 300a–b.—Raymond, Ann. Carnegie Mus., 7, 1911, p. 235, pl. 35, fig. 4.
Middle Chazy or Black River: Chazy, New York.

ORTHIS COSTATA Hall. See Orthis(?) pumila.

ORTHIS COSTATA Miller. See Platystrophia crassa.

ORTHIS (PLATYSTROPHIA) CRASSA James. See Platystrophia crassa.

ORTHIS CRISPATA Emmons. See Hebertella (Glyptorthis) crispata.

ORTHIS CYCLUS James. See Dalmanella emacerata.

ORTHIS (PLATYSTROPHIA) CYPHA James. See Platystrophia cypha.

Orthis davidsoni Verneuil.
Orthis davidsoni Verneuil, Bull. Soc. Géol. de France, 2d ser., 5, 1848, p. 341, pl. 4, fig. 9.—Billings, Geol. Canada, 1863, p. 312, fig. 318.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pp. 192, 193, 221, 228, pl. 5, figs. 5–8.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 512, figs.
Orthis calligramma var. davidsoni Nicholson and Hinde, Canadian Jour., n. s., 14, 1874, p. 144.—Nicholson, Pal. Prov. Ontario, 1875, p. 47, fig. 21g.
Silurian: Europe; Island of Anticosti.

ORTHIS DAYTONENSIS Foerste. See Hebertella daytonensis.

ORTHIS (DINORTHIS) DEFLECTA Winchell and Schuchert. See Dinorthis (Plæsiomys) deflecta.

ORTHIS DEFORMIS Hall. See Schuchertella deformis.

Orthis(?) delicatula Billings.
Orthis delicatula Billings, Pal. Fossils, 1, Geol. Surv. Canada, 1865, p. 217.
Chazyan (Quebec—N, P): Table Head, Pistolet Bay, and near Portland Creek, Newfoundland.

ORTHIS (PLATYSTROPHIA) DENTATA Meek. See Platystrophia crassa.

ORTHIS DESMOPLEURA Meek. See Eoorthis desmopleura.

ORTHIS (PLECTORTHIS) DESMOPLEURA NYMPHA Walcott. See Eoorthis desmopleura nympha.

ORTHIS DICHOTOMA Hall. See Plectorthis dichotoma.

ORTHIS DISPARILIS Billings. See Orthis ignicula.

ORTHIS DISPARILIS Conrad. See Orthis tricenaria.

ORTHIS DISPARILIS Owen. See Dalmanella testudinaria.

Orthis disparilis Kayser.
Orthis disparilis Kayser (not Conrad), Palæontographica, Suppl., 3, 1876, p. 26, pl. 3, figs. 4–8.
Ordovician: Potrero de los Angulos, etc., Argentina.

ORTHIS ELECTRA Billings. See Dalmanella electra.

ORTHIS ELECTRA var. LÆVIS Matthew. See Dalmanella electra lævis.

ORTHIS ELECTRA var. MAJOR Matthew. See Dalmanella electra major.

ORTHIS ELEGANTULA Dalman. See Dalmanella elegantula.

ORTHIS ELEGANTULA var. PARVA Foerste. See Dalmanella elegantula parva.

ORTHIS ELLA Hall. See Plectorthis (Encuclodema) sordida.

ORTHIS EMACERATA Meek. See Dalmanella meeki.

ORTHIS EMACERATA Sardeson. See Dalmanella macrior.

ORTHIS EMACERATA Hall. See Dalmanella emacerata and D. emacerata brevicula.

ORTHIS EMACERATA var. MULTISECTA Meek. See Dalmanella multisecta.

ORTHIS EQUIVALVIS Foerste. See Plectorthis æquivalvis.

ORTHIS? ERRATICA Hall. See Zygospira erratica.

Orthis(?) eudocia Billings.
Orthis Eudocia Billings, Pal. Fossils, 1, Geol. Surv. Canada, 1865, p. 83, fig. 76 (adv. sheets, 1862).
Ozarkian? (Levis—erratics): Point Levis, Quebec.

Orthis euryone Billings.
Orthis Euryone Billings, Pal. Fossils, 1, Geol. Surv. Canada, 1865, p. 78, fig. 71 (adv. sheets, 1862).—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pp. 221, 228, pl. 5, fig. 4.
Orthis euryone? Matthew, Trans. Royal Soc. Canada, 1893, p. 101, pl. 7, fig. 5.
Canadian: Point Levis, Quebec (Levis—erratics); near St. John, New Brunswick (Bretonian—Div. C 3d).

ORTHIS EVADNE Billings. See Dalmanella(?) evadne.

ORTHIS FASCIATA Hall. See Orthostrophia (Schizoramma) fasciata.

ORTHIS FAUSTA Foerste. See Hebertella fausta.

ORTHIS (HEBERTELLA) FAUSTA var. SQUAMOSA Foerste. See Hebertella fausta.

ORTHIS (DALMANELLA) FERTILIS Bassler. See Dalmanella fertilis.

ORTHIS FISSICOSTA Hall. See Plectorthis fissicosta.

ORTHIS FISSIPLICA Roemer. See Orthostrophia (Schizoramma) fissiplica.

ORTHIS FLABELLA Hall. See Orthis flabellites.

ORTHIS FLABELLA Foerste. See Orthis flabellites militaris.

Orthis flabellites Foerste.
Orthis flabellulum? Hall (not Sowerby), Geol. New York; Rep. 4th Dist., 1843, p. 105, fig. 5.
Orthis flabellulum var. Hall, Pal. New York, 2, 1852, pp. 254, 255, pl. 52, figs. 6, 7.
Orthis flabellulum Billings, Canadian Nat. Geol., 1, 1856, p. 136, pl. 2, fig. 6.
Orthis flabella Hall, 2d Ann. Rep. New York State Geol., 1883, pl. 34, figs. 41, 42; p. 35, figs. 6-8.
Orthis calligramma Foerste (not Dalman), Proc. Boston Soc. Nat. Hist., 24, 1890, p. 308, pl. 6, figs. 4, 5.
Orthis (Dinorthis) calligramma Foerste, Geol. Ohio, 7, 1895, p. 570, pl. 25, figs. 12a, 12b; pl. 31, figs. 4, 5; pl. 37A, fig. 20.
Orthis flabellites Foerste, Proc. Boston Soc. Nat. Hist., 24, 1890, p. 311.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pp. 221, 227, pl. 5, figs. 37–41; pl. 20, fig. 1.—Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 286.—Grabau, Bull. New York State Mus., 45, 1901, p. 186, fig. 94; Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 186, fig. 94.—Weller, Geol. Surv. New Jersey, Pal., 3, 1903, p. 231, pl. 20, fig. 20.—Kindle and Breger, 28th Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1904, p. 432, pl. 2, figs. 3–6, 11.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 251, fig. 302.—Foerste, Bull. Sci. Lab. Denison Univ., 14, 1909, p. 74, pl. 3, fig. 43.

Orthis flabellites—Continued.
Platystrophia flabella Hall, 36th Rep. New York State Mus. Nat. Hist., 1884, p. 75, pl. 3, fig. 5.
Orthis alata Shaler, Bull. Mus. Comp. Zool., 4, 1865, p. 66.
Niagaran: Lockport, Rochester, etc., New York; Ontario (Rochester); Osgood, etc., Indiana (Osgood); Island of Anticosti (Anticostian); Kentucky; Ohio; Wisconsin, etc.
Plesiotype.—Cat. No. 51349, U.S.N.M.

Orthis flabellites dinorthis (Foerste).
Orthis calligramma var. dinorthis Foerste, Geol. Surv. Ohio, 7, 1895, p. 572.
Upper Medinan (Brassfield): Dayton, Ohio.

Orthis flabellites euorthis (Foerste).
Orthis calligramma var. euorthis Foerste, Geol. Surv. Ohio, 7, 1895, p. 572.
Upper Medinan (Brassfield): Dayton, Ohio.

Orthis flabellites fissiplicata (Foerste).
Orthis (Dinorthis) calligramma var. fissiplicata Foerste, Ohio Geol. Surv., 7, 1895, pp. 572, 573, pl. 37a, figs. 20a, b.
Orthis flabellites var. fissiplicata Savage, Bull. Geol. Surv., Illinois, 23, 1913, p. 75, pl. 4, fig. 7.
Upper Medinan: Dayton, Ohio (Brassfield); Louisiana, near Buffalo Creek, Pike County, Missouri; Hamburg, Illinois (Edgewood).

Orthis flabellites militaris Foerste.
Orthis flabella Foerste, Bull. Sci. Lab. Denison Univ., 1, 1885, p. 82, pl. 13, fig. 12.
Orthis flabellites militaris Foerste, ibid., 14, 1909, p. 75.
Upper Medinan (Brassfield): Soldiers' Home, Dayton, Ohio.

Orthis flabellites spania Hall and Clarke.
Orthis flabellites var. spania Hall and Clarke, Pal. New York, 8, pt. 2, 1895, pl. 84, figs. 10; 48th Rep. New York State Mus., 2, for 1895, 1897, p. 339, pl. 4, fig. 4; 14th Rep. State Geol. New York for 1894, 1897, p. 339, pl. 4, fig. 4.
Niagaran (Racine): Near Milwaukee, Wisconsin.

ORTHIS FLABELLULUM? Hall. See Orthis flabellites.

ORTHIS FLABELLULUM Nettelroth. See Orthis nettelrothi.

ORTHIS FRANKFORTENSIS James. See Hebertella frankfortensis.

ORTHIS (DALMANELLA) FREITANA Clarke. See Dalmanella freitana.

ORTHIS FUTILIS Sardeson. See Dalmanella futilis.

ORTHIS GEMMICULA Billings. See Orthidium gemmicula.

ORTHIS GIBBOSA Billings. See Pianodema subæquata gibbosa and Hebertella vulgaris.

Orthis(?) glypta Hall and Clarke.
Orthis? glypta Hall and Clarke, Pal. New York, 8, pt. 2, 1895, p. 359, pl. 84, figs. 8, 9; 48th Rep. New York State Mus., 2, for 1895, 1897, p. 338, pl. 4, figs. 5, 6; 14th Rep. State Geol. New York for 1894, 1897, p. 338, pl. 4, figs. 5, 6.
Niagaran (Racine): Near Milwaukee, Wisconsin.

ORTHIS HAMBURGENSIS Walcott. See Dalmanella hamburgensis.

Orthis hippolyte Billings.

Orthis hippolyte Billings, Pal. Fossils, 1, 1865, p. 81, fig. 73; p. 218 (adv. sheets, 1862).—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pp. 217, 221, 228.

Orthis hippolyte? Meek, 6th Ann. Rep. U. S. Geol. Surv. Terr., 1873, p. 464.

Canadian: Point Levis and Phillipsburg, Quebec; Cow Head, Newfoundland; near Malade City, Utah.

Orthis(?) holstoni Safford.

Orthis? holstoni (Safford MS.) Hall and Clarke, Pal. New York, 7, pt. 1, 1892, pp. 218, 340, pl. 5A, figs. 35–37; 48th Rep. New York State Mus., 2, for 1895, 1897, p. 339, pl. 4, figs. 19–21; 14th Rep. State Geol. New York for 1894, 1897, p. 339, pl. 4, figs. 19–21.—Wysogorski, Zeits. d. d. geol. Gesell., 52, 1900, p. 227, footnote.

Chazyan (Ottosee): Near Knoxville, Tennessee.

Orthis humboldti D'Orbigny.

Orthis Humboldtii D'Orbigny, Voyage l'Amerique Merid., 3, pt. 4, 1842, p. 27; ibid., 8, Atlas, 1847, pl. 2, figs. 16–20.—Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 287.

Silurian: Rio Grande, Province de Valle Grande, Bolivia.

Orthis huroniensis Castelnau. See Rafinesquina alternata.

Orthis hybrida Sowerby. See Rhipidomella hybrida.

Orthis ignicula Raymond.

Orthis disparilis Billings (not Conrad), Canadian Nat. Geol., 4, 1859, p. 440, figs. 20 a, b.

Orthis ignicula Raymond, Amer. Jour. Sci., 20, 1905, p. 369; Ann. Carnegie Mus., 7, 1911, p. 236, pl. 35, figs. 5–7, figs. 10, 11.

Chazyan (Crown Point): Valcour Island, New York.

Orthis ignota Sardeson. See Dalmanella ignota.

Orthis imperator Billings. See Hebertella imperator.

Orthis incurvata Castelnau. See Strophomena incurvata.

Orthis inflata? James. See Platystrophia acutilirata senex.

Orthis insculpta Hall. See Hebertella insculpta.

Orthis interplicata Foerste.

Orthis interplicata Foerste, Bull. Sci. Lab. Denison Univ., 14, 1909, p. 76, pl. 3, fig. 44.

Clinton (Osgood): New Marion, Indiana.

Orthis interstriata Hall. See Schuchertella interstriata.

Orthis iphigenia Billings. See Dinorthis (Plæsiomys) iphigenia.

Orthis jamesi Hall. See Plectorthis jamesi.

Orthis (Plectorthis) johannensis Walcott. See Eoorthis johannensis.

Orthis jugosa James. See Dalmanella meeki.

Orthis kankakensis McChesney. See Plectorshis (Austinella) kankakensis.

Orthis kassubæ Winchell. See Pianodema subæquata perveta.

Orthis kennicotti McChesney. See Dinorthis carleyi.

Orthis lamellosa Twenhofel.
Orthis lamellosa Twenhofel, Bull. Victoria Mem. Mus., 3, 1914, p. 24, pl. 1, figs. 1-3.
Gamachian (Ellis Bay): Ellis Bay, Anticosti.

ORTHIS LATICOSTA Meek. See Platystrophia laticosta.

Orthis laurentina (Billings).
Orthis laurentina Billings, Geol. Surv. Canada, Rep. for 1856, 1857, p. 297; Pal. Foss., 1, 1865, Geol. Surv. Canada, p. 138, fig. 115 (adv. sheets 1862).—Shaler, Mem. Geol. Surv. Kentucky, 1, 3d Mem., 1876, p. 41.
Billingsella? laurentina Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pp. 194, 231, 238, pl. 7A, figs. 1-6.
Gamachian (Ellis Bay): Junction Cliff, Anticosti.

ORTHIS LENTICULARIS Davidson. See Eoorthis (Orusia) lenticularis.

ORTHIS LENTICULARIS var. ATRYPOIDES Matthew. See Eoorthis (Orusia) lenticularis atrypoides.

ORTHIS LENTICULARIS var. LYNCIOIDES Matthew. See Eoorthis (Orusia) lenticularis lyncioides.

ORTHIS LENTICULARIS STROPHOMENOIDES Matthew. See Eoorthis (Orusia) lenticularis.

Orthis(?) leptænoides Emmons.
Orthis leptænoides Emmons, Geol. New York, Rep. 4th Dist., 1842, p. 396, fig. 1.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 521.—Schuchert, Bull. U. S. Geol. Surv. 87, 1897, p. 288.
Trenton: New York.
Observation.—Undefined and figure too poor for identification.

ORTHIS(?) LINNEYI James. See Orthorhynchula linneyi.

ORTHIS LONENSIS Walcott. See Hebertella lonensis.

ORTHIS (PLÆSIOMYS) LORICULA Hall. See Dinorthis (Plæsiomys) deflecta.

ORTHIS LUNATA Sowerby. See Dalmanella lunata.

ORTHIS LYNX of authors. See Platystrophia lynx and P. biforata.

ORTHIS MACLEODI Whitfield. See Dalmanella macleodi.

ORTHIS MACRIOR Sardeson. See Dalmanella macrior.

ORTHIS MARIA Billings. See Hebertella maria.

ORTHIS MEDIA Shaler. See Dalmanella elegantula media.

ORTHIS MEDIA Winchell. See Pianodema subæquata perveta.

ORTHIS MEEDSI Winchell and Schuchert. See Dinorthis meedsi.

ORTHIS (DINORTHIS) MEEDSI var. ARCTICA Schuchert. See Dinorthis meedsi arctica.

ORTHIS MEEDSI var. GERMANA Winchell and Schuchert. See Dinorthis meedsi germana.

ORTHIS MEEKI Miller. See Dalmanella meeki.

Orthis menapiæ Hicks.

Orthis menapiæ (Hicks MS.) Davidson, Geol. Mag. London, 5, 1868, p. 314, pl. 16, figs. 24–28.—Matthew, Trans. Royal Soc. Canada, 10, 1893, p. 101, pl. 7, figs. 2–6.

Lower Ordovician: England; near St. Johns, New Brunswick (Bretonian–Div. C3d).

ORTHIS MEROPE Billings. See Scenidium? merope.

Orthis(?) minna Billings.

Orthis minna Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 303, fig. 294.

Canadian (Beekmantown): Stanbridge, Quebec.

ORTHIS MINNEAPOLIS N. H. Winchell. See Pianodema subæquata.

ORTHIS MINNESOTENSIS Sardeson. See Dinorthis meedsi.

ORTHIS MISSOURIENSIS Shumard. See Schuchertella missouriensis.

ORTHIS(?) MORROWENSIS James. See Platystrophia morrowensis.

ORTHIS MULTISECTA Sardeson. See Dalmanella multisecta.

Orthis(?) mycale Billings.

Orthis Mycale Billings, Pal. Fossils, 1, 1865, p. 82, text fig. 75 (Adv. sheets, 1862).—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 217, pl. 7A, figs. 10, 11.

Ozarkian? (Levis-erratics): Point Levis, Quebec.

ORTHIS NEGLECTA James. See Plectorthis neglecta.

Orthis nettelrothi Foerste.

Orthis flabellulum Nettelroth, Kentucky Fossil Shells, Mem. Kentucky Geol. Surv., 1889, p. 38, pl. 34, fig. 30.

Orthis nettelrothi Foerste, Bull. Sci. Lab. Denison Univ., 14, 1909, p. 76.

Niagaran (Louisville): Louisville, Kentucky.

ORTHIS NEWTONENSIS Weller. See Eoorthis newtonensis.

ORTHIS NISIS Hall and Whitfield. See Orthostrophia (Schizoramma) nisis.

Orthis nitens Vanuxem. Not recognized.

Orthis nitens Vanuxem, Nat. Hist. New York Geol., 3, 1842, p. 90.

Clinton: New York.

ORTHIS OBLATA EMARGINATA Hall. See Rhipidomella emarginata.

Orthis obtusa Pander.

Orthis obtusa (Pander) Kayser, Palæontographica, Suppl., 3, 1876, p. 19, pl. 3, figs. 1, 2.

Ordovician: Europe; Cordillere San Juan, Argentina.

ORTHIS OCCIDENTALIS of authors. See Hebertella occidentalis and H. alveata.

ORTHIS OCCIDENTALIS var. SINUATA Meek. See Hebertella occidentalis sinuata.

ORTHIS ORBICULARIS Sowerby. See Dalmanella lunata.

ORTHIS ORTHAMBONITES Billings. See Orthis panderiana.

Orthis panderiana Hall and Clarke.

Orthis orthambonites Billings (not Murchison and Verneuil), Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 77, fig. 70 (Adv. sheets, 1862); Geol. Canada, 1863, p. 231, fig. 245.—Schuchert, 9th Ann. Rep. New York State Geol., 1890, p. 43.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pp. 221, 228, pl. 5, figs. 1-3.—Matthew, Trans. Roy. Soc. Canada, 10, 1893, p. 101, pl. 7, fig. 4.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 526, figs.

Orthis panderiana Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pl. 5, footnote; 48th Rep. New York State Mus., 2, for 1895, 1897, p. 338, pl. 4, figs. 1-3; 14th Rep. State Geol. New York for 1894, 1897, p. 338, pl. 4, figs. 1-3.

Canadian: Point Levis, Quebec (Levis-erratics); St. John, New Brunswick (Bretonian-Div. C3d).

ORTHIS PARVA Billings. See Dalmanella meeki.

ORTHIS PECTINELLA Whitfield. See Plectorthis (Austinella) whitfieldi.

ORTHIS PECTINELLA Emmons. See Dinorthis pectinella.

ORTHIS PECTINELLA var. SEMIOVALIS Hall. See Dinorthis pectinella.

ORTHIS PEPINA Hall. See Billingsella coloradoensis.

ORTHIS PERVETA Billings. See Hebertella vulgaris.

ORTHIS PERVETA Conrad. See Pianodema subæquata perveta.

ORTHIS PERVETA Hall. See Pianodema subæquata.

ORTHIS PETRAE Sardeson. See Dinorthis proavita.

Orthis(?) piger Billings.

Orthis piger Billings, Canadian Nat. Geol., 4, 1859, p. 442.—Raymond, Ann. Carnegie Mus., 7, 1911, p. 247.

Orthis(?) pigra Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 290.

Clitambonites piger Schuchert and Twenhofel, Bull. Geol. Soc. Amer., 21, 1910, p. 691.

Chazyan (Mingan): Mingan Islands, Canada.

ORTHIS PISUM HALL. See Nucleospira pisiformis.

ORTHIS PLANA Castelnau. See Rafinesquina alternata.

ORTHIS PLATYS Billings. See Dinorthis (Plæsiomys) platys.

ORTHIS PLICATELLA White. See Orthis tricenaria.

ORTHIS PLICATELLA Hall. See Plectorthis plicatella.

ORTHIS (PLECTORTHIS) PLICATELLA Winchell and Schuchert. See Plectorthis plicatella trentonensis.

ORTHIS PLICATELLA var. TRIPLICATELLA Lesley. See Plectorthis fissicosta triplicatella.

ORTHIS? (DELTHYRIS) PLICATUS Hall. See Spirifer vanuxemi.

ORTHIS (DELTHYRIS) PLICATUS Hall. See Spirifer (Delthyris) vanuxemi.

ORTHIS POGONIPENSIS Hall and Whitfield. See Pianodema pogonipensis.

ORTHIS PORCATA Billings. See Dinorthis (Plæsiomys) porcata anticostiensis.

ORTHIS PORCIA Billings. See Clitambonites porcia.

ORTHIS PORRECTA Sardeson. See Dalmanella porrecta.

ORTHIS PROAVITA Winchell and Schuchert. See Dinorthis proavita.

Orthis (Dalmanella?) pumila Ulrich.
Orthis costata Hall (not Sowerby), Amer. Jour. Sci., 48, 1845, p. 295.—Miller, Cincinnati Quart. Jour. Sci., 2, 1875, p. 33.
Orthis pumila Ulrich, Catalogue Cincinnati Foss., 1880, p. 14.
Orthis cincinnatiensis Miller, Amer. Pal. Foss., 2d ed., 1883, p. 296.
Maysville (Corryville): Cincinnati, Ohio.

Orthis(?) punctostriata Hall.
Orthis punctostriata Hall, Pal. New York, 2, 1852, p. 254, pl. 52, fig. 5.
Orthis? punctostriata Hall and Clarke, ibid., 8, pt. 1, 1892, p. 217, pl. 20, figs. 2-4—Grabau, Bull. New York State Mus., 45, 1901, p. 186, fig. 95; Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 186, fig. 95.
Clinton (Rochester): Lockport and Lewiston, New York.

ORTHIS PYRAMIDALIS Hall. See Scenidium pyramidalis.

ORTHIS RETRORSA Salter. See Dinorthis (Plæsiomys) retrorsa.

ORTHIS RETRORSA Billings. See Dinorthis carleyi.

ORTHIS RHYNCHONELLIFORMIS Shaler. See Rhipidomella uberis rhynchonelliformis.

ORTHIS ROGATA Sardeson. See Dalmanella rogata.

Orthis(?) rugiplicata Hall and Whitfield.
Orthis rugæplicata Hall and Whitfield, 24th Rep. New York State Cab. Nat. Hist., 1872, p. 182; 27th Rep., ibid., 1875, pl. 9, figs. 1-3.—Hall, 2d Ann. Rep. New York State Geol., 1883, pl. 34, figs. 25-27.—Nettelroth, Kentucky Fossil Shells, Mem. Kentucky Geol. Surv., 1889, p. 44, pl. 27, figs. 1-3.
Orthis rugiplicata, Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 217.
Niagaran (Louisville): Louisville, Kentucky.

ORTHIS RUIDA Billings. See Dalmanella? ruida.

Orthis(?) saffordi Hall and Clarke.
Orthis? saffordi Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pp. 218, 340, pl. 5A, figs. 38-40; 48th Rep. New York State Mus., 2, for 1895, 1897, p. 340, pl. 4, figs. 10-12; 14th Rep. State Geol. New York for 1894, 1897, p. 340, pl. 4, figs. 10-12.
Chazyan (Ottosee): Near Knoxville, Tennessee.

Orthis? saltensis Kayser.
Orthis saltensis Kayser, Beitr. Geol. Pal. Argentin. Rep., Palæontographica Suppl., 3, 1896, p. 8, pl. 1, fig. 16; Zeits. Deutsch. Geol. Gesell., 49, 1897, p. 280.—Hoek, Neues Jahrb. Min., Geol. Pal., 34, 1912, p. 219.
Lowest Ordovician: Salta, etc., Argentina.

ORTHIS SCOVILLI Hall and Clarke. See Plectorthis (Austinella) scovilli.

ORTHIS(?) SECTOSTRIATA Ulrich. See Plectorthis (Encuclodema) sectostriata.

ORTHIS (SCHIZOPHORIA) SENECTA Hall and Clarke. See Schizophoria senecta.

ORTHIS SINUATA Hall. See Hebertella occidentalis sinuata.

ORTHIS (DALMANELLA) SMITHI Clarke. See Dalmanella smithi.

ORTHIS SOLA Billings. See Rhipidomella sola.

ORTHIS STONENSIS Safford. See Pianodema stonensis.

ORTHIS STRIATELLA Dalman. See Chonetes striatellus.

ORTHIS STRIATULA Emmons. See Dalmanella testudinaria.

ORTHIS SUBÆQUATA Conrad. See Pianodema subæquata.

ORTHIS SUBÆQUATA Billings. See Hebertella vulgaris.

ORTHIS (DALMANELLA) SUBÆQUATA CIRCULARIS Winchell and Schuchert. See Pianodema subæquata circularis.

ORTHIS (DALMANELLA) SUBÆQUATA CONRADI Winchell. See Pianodema subæquata conradi.

ORTHIS (DALMANELLA) SUBÆQUATA var. GIBBOSA Winchell and Schuchert. See Pianodema subæquata gibbosa.

ORTHIS (DALMANELLA) SUBÆQUATA var. PERVETA Winchell and Schuchert. See Pianodema subæquata perveta.

ORTHIS SUBCIRCULA Simpson. See Rhipidomella subcircula.

ORTHIS SUBJUGATA Hall. See Hebertella subjugata.

Orthis(?) subnodosa Hall.

Orthis subnodosa Hall, Desc. New sp. Fossils from Waldron, Indiana, 1879, p. 14; 11th Rep. State Geol. Indiana, 1882, p. 286, pl. 27, fig. 17; Trans. Albany Inst., 10, 1883, p. 70.—Nettelroth, Kentucky Fossil Shells, Mem. Geol. Surv. Kentucky, 1889, p. 44.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 535, figs.—Kindle and Breger, Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1904, p. 433, pl. 2, fig. 7.

Niagaran: Waldron, Indiana (Waldron); Louisville, Kentucky; Carroll County, Indiana.

ORTHIS SUBQUADRATA Hall. See Dinorthis (Plæsiomys) subquadrata.

ORTHIS SWEENEYI Winchell. See Dinorthis pectinella sweeneyi.

Orthis(?) tenuidens Hall.

Orthis tenuidens Hall, Pal. New York, 2, 1852, p. 58, pl. 20, fig. 9.

Clinton: Oneida County, New York.

ORTHIS TERSUS Sardeson. See Dalmanella tersa.

ORTHIS TESTUDINARIA of authors. See Dalmanella testudinaria, D. fertilis, D. rogata, and Orthis tricenaria.

ORTHIS (DALMANELLA) TESTUDINARIA var. EMACERATA Winchell and Schuchert. See Dalmanella macrior.

ORTHIS (DALMANELLA) TESTUDINARIA var. MEEKI Winchell and Schuchert. See Dalmanella corpulenta.

Orthis tricenaria Conrad.

Orthis tricenaria Conrad, Proc. Acad. Nat. Sci. Philadelphia, 1, 1843, p. 333.—Hall, Pal. New York, 1, 1847, p. 121, pl. 32, fig. 8.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 193, pl. 9, fig. 8.—Salter, Can. Org. Rem., 1, Geol. Surv.

Orthis tricenaria—Continued.

Canada, 1859, p. 39, pl. 9, figs. 1–4.—Hall, Geol. Wisconsin, 1, 1862, p. 42, figs. 8–11.—Chapman, Canadian Jour., n. s., 6, 1862, p. 111, fig. 91; ibid., 8, 1863, p. 199, fig. 184.—Billings, Geol. Canada, 1863, p. 167, fig. 151.—Chapman, Expos. Min. and Geol. Canada, 1864, p. 115, fig. 92; p. 171, fig. 184.—Safford, Geol. Tennessee, 1869, p. 275, fig. 9.—Shaler, Mem. Geol. Surv. Kentucky, 1, 3d Mem., 1876, p. 36.—Hall, 2d Ann. Rep. New York State Geol., 1883, pl. 35, figs. 1–5.—Walcott, Mon. U. S. Geol. Surv., 8, 1884, p. 74, pl. 11, fig. 4.—Miller, N. A. Geol. Pal., 1889, p. 360, fig. 592.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 538, figs.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pp. 191, 193, 221, 228, pl. 5, figs. 9–14.—Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 418, pl. 32, figs. 18–23.—Keyes, Geol. Surv. Missouri, 5, 1895, p. 60, pl. 39, fig. 4.—Whiteaves, Geol. Surv. Canada, Pal. Foss., 3, pt. 3, 1897, p. 175.—Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 293; Proc. U. S. Nat. Mus., 22, 1900, p. 156.—Ruedemann, Bull. New York State Mus., 49, 1902, p. 24.—Weller, Geol. Surv. New Jersey, Pal., 3, 1903, p. 151, pl. 9. figs. 18–21.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 250, fig. 301a-c.

Orthis disparilis Conrad, Proc. Acad. Nat. Sci. Philadelphia, 1, 1843, p. 333.—Hall, Pal. New York, 1, 1847, p. 119, pl. 32, fig. 4.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 194, pl. 9, fig. 4a–c.—Hall, Geol. Wisconsin, 1, 1862, p. 435.—Billings, Geol. Canada, 1863, p. 130, fig. 60.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 513, figs.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pp. 191, 221, 228.

Platystrophia tricenaria Hall, 36th Rep. New York State Mus. Nat. Hist., 1884, p. 75, pl. 3, fig. 1.

Orthis testudinaria? Owen, Geol. Expl. Iowa, Wisconsin, and Illinois, 1844, pl. 15, fig. 11.

Orthis plicatella White (not Hall), Wheeler's Expl. and Survey west 100th Merid., 4, 1875, p. 72, pl. 4, fig. 10.

Black River: Mineral Point, etc., Wisconsin; Iowa; Minnesota; Kentucky; Tennessee; New York; Canada; etc.

Stones River: Central Tennessee.

Plesiotypes.—Cat. Nos. 8553, 17252, U.S.N.M. (White and Walcott).

Orthis(?) trinucleus Hall.

Orthis trinucleus Hall, Pal. New York, 2, 1852, p. 58, pl. 20, fig. 8.

Clinton: Wayne County, New York.

ORTHIS TRIPLICATELLA Meek. See Plectorthis fissicosta triplicatella.

Orthis(?) tritonia Billings.

Orthis Tritonia Billings, Pal. Fossils, 1, 1865, p. 76, fig. 69 (adv. sheets 1862); Geol. Canada, 1863, p. 231, fig. 244.—Hall and Clarke, Pal. New York, 8, pt.1, 1892, p. 217, pl. 7A, figs. 12, 13.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 538, figs.

Ozarkian? (Levis—erratics): Point Levis, Quebec.

ORTHIS UBERIS Billings. See Rhipidomella uberis.

Orthis vespertilio Sowerby.

Orthis vespertilio (Sowerby) Kayser, Palæontographica, Suppl. 3, 1876, p. 27, pl. 3, figs. 22, 23.

Ordovician: Europe; Potrero de los Angulos, etc., Argentina.

ORTHIS WHITFIELDI Winchell. See Plectorthis (Austinella) whitfieldi.

ORTHIS (PLECTORTHIS) WICHITAENSIS Walcott. See Eoorthis wichitaensis.

Orthisina D'Orbigny. See Clitambonites Pander.

Orthisina adscendens Pander. See Clitambonites adscendens.

Orthisina diversa Shaler. See Clitambonites diversus.

Orthisina grandæva Billings. See Billingsella? grandæva.

Orthisina(?) johannensis Matthew. See Eoorthis johannensis.

Orthisina verneuili Billings. See Clitambonites diversus.

ORTHOCERAS Breynius.

Orthoceras Breynius, Dissertatio Physica de Polythalamiis, 1832, p. 12.—Eaton, Geol. Textb., 2d ed., 1832, p. 28.—Quenstedt, Neues Jahrb. f. Min., etc., 1840, p. 250.—Koninck, Desc. Animaux Fossiles, Liege, 1842, p. 497.—Castelnau, Essai Syst. Sil. l'Amerique Septent., 1843, p. 24.—McCoy, Syn. Char. Carb. Foss. Ireland, 1844, p. 6.—Hall, Pal. New York, 1, 1847, p. 207.—Anthony, Quart. Jour. Geol. Soc. London, 3, 1847, p. 255.—Hall, Quart. Jour. Geol. Soc. London, 5, 1848, p. 107.—Anthony, Amer. Jour. Sci. Arts., 2d ser., 6, 1848, p. 132, fig.—Woodward, Man. Mollusca, pt. 1, 1851, p. 88.—Saemann, Palæontographica, 3, 1852, pp. 134, 162.—Geinitz, Die Verst. der Grauwack., Leipzig, 1853, p. 26.—McCoy, British Pal. Rocks, Foss., 1854, p. 312.—Pictet, Traité de Pal., 2d ed., 2, 1854, p. 632.—Barrande, Neues Jahrb. Min., etc., 1854, p. 8, pl. 1, figs. 5a, b, 6a, b; ibid., 1855, p. 258; Bull. Soc. Geol. France, 2d ser., 12, 1855, p. 158.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 148.—Billings, Canadian Nat. Geol., 2, 1857, p. 136, pl. 2, fig. 2.—Barrande, Neues Jahrb. Min., etc., 1859, p. 780.—Hitchcock, Geol. Vermont for 1861, 1862, p. 297.—Chapman, Canadian Jour., n. s., 8, 1863, p. 20.—Barrande, Syst. Sil. du Centre Boheme, 2, pt. 1, 1867, p. 445; pt. 3, 1874, p. 1.—Chapman, Expos. Min., Geol. Canada, 1864, pp. 127-128.—Miller, Cincinnati Quart. Jour. Sci., 2, 1875, p. 124.—Barrande, Cephalopodes: Ext. Syst. Sil. du Centre Boheme, 1877, p. 99.—Hall, Pal. New York, 5, pt. 2, 1879, pp. 217, 227.—Waagen, Mem. Geol. Surv. India, Pal. Indica, 13th ser., 1, 1879, p. 66.—Koninck, Ann. d. Mus. Royal d'Hist. Nat. de Belgique, 5, 1880, p. 44.—Blake, Mon. British Foss. Cephalopoda, 1882, p. 48.—Hyatt, Proc. Boston Soc. Nat. Hist., 22, 1884, p. 275.—Walcott, Mon. U. S. Geol. Surv., 8, 1884, p. 200.—Zittel, Handb. Pal., 2, 1884, p. 363.—James, J. F., Jour. Cincinnati Soc. Nat. Hist., 8, 1886, p. 237.—Newell, Proc. Boston Soc. Nat. Hist., 23, 1888, p. 466.—Foord, Cat. Foss. Ceph. British Mus., 1, 1888, p. 1.—Holzapfel, Palaeontologische, Neue Folge, 1, Heft 1, Jena, 1889, p. 45.—Miller, N. A. Geol. Pal., 1889, p. 445.—Whidborne, Mon. Dev. Fauna South England, 1, Pal. Soc., 1890, p. 120.—Bather, Nat. Sci., 5, pp. 428, 430, text fig. 2.—Clarke, Amer. Geol., 15, 1895, p. 126.—Hyatt, ibid., 16, 1895, p. 11.—Holzapfel, Abhandl. d. Konig. Preuss. geol. Landesanstalt, Neue Folge, Heft 16, 1895, p. 148.—Koken, Die Leitfossilien, Leipzig, 1896, p. 48, fig. 20.—Clarke, Geol. Minnesota, 3, pt. 2, 1897, p. 783.—Grabau, Bull. Buffalo Soc. Nat. Sci., 6, 1899, p. 286.—Holm, Sveriges Geol. Unders., Ser. C, No. 179, 1899, p. 74.—Clarke, Bull. New York State Mus., 13, 1900, p. 167.—Hyatt, Zittel-Eastman Textb. Pal., 1, 1900, p. 518.—Grabau, Bull. New York State Mus., 45, 1901, p. 215; Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 215.—Jaekel, Zeits. d. d. geol. Gesell., 54, Protok., 1902, pp. 7, 67, 75.—Clarke, Amer. Geol., 31, 1903, p. 216.—Jaekel in Ruedemann, Amer. Geol., 31, 1903, p. 199.—Foord, Mon. Carb. Ceph. Ireland, pt. 5, Pal. Soc., App. 1903, p. 210.—Ruedemann, Bull. New York State Mus., 90, 1906, p. 432.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 1027.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 47.—Hyatt, Zittel-Eastman Textb. Pal., 2d ed., 1913, p. 598.

ORTHOCERAS—Continued.

Orthoceratites Fischer de Waldheim, Oryctographie Gouv. de Moscou, 1830, p. 124.—Eichwald, Zool. Specialis, pt. 2, Vilnae, 1830, p. 31.—Steininger, Mem. Soc. Geol. France, 1, 1834, p. 368.—Troost, Mem. Soc. Geol. France, 3, 1838, p. 87.—D'Orbigny, Prodr. de Pal., 1, 1849, p. 2.

ORTHOCERAS ABNORME Hall. See Actinoceras abnorme.

Orthoceras? abruptum Hall.

Orthoceras abruptum Hall, Pal. New York, 2, 1852, p. 97, pl. 29, fig. 4a, b.

Cyrtoceras? abruptum Hall, Pal. New York, 5, pt. 2, 1879, p. 220 (gen. ref.).

Clinton (Irondequoit): Lockport, New York.

Orthoceras æquale (Emmons).

Orthoceratites æqualis Emmons, Nat. Hist. New York, Geol., 2, 1842, p. 404, fig. 1.

Orthoceras æquale Miller, N. A. Geol. Pal., 1889, p. 446 (gen. ref.).—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 541, figs.

Trenton: New York.

Orthoceras albersi Miller and Faber.

Orthoceras albersi Miller and Faber, Jour. Cincinnati Soc. Nat. Hist., 17, 1894, p. 140, pl. 8, figs. 1–4.—Miller, N. A. Geol. Pal., 2d App., 1897, p. 776, fig. 1423.

Trenton (Upper): West Covington, Kentucky.

Orthoceras alienum Hall.

Orthoceras alienum Hall, 20th Rep. New York State Cab. Nat. Hist., 1868, p. 354; rev. ed., 1870, p. 414, pl. 24, figs. 6–7.

Niagaran (Racine): Racine, Wisconsin.

ORTHOCERAS ALLUMETTENSE Billings. See Loxoceras allumettense.

Orthoceras amplicameratum Hall.

Orthoceras amplicameratum Hall, Pal. New York, 1, 1847, p. 205, pl. 51, figs. 1a–g.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 150.—Hitchcock, Geol. Vermont, 1, for 1861, 1862, p. 298, fig. 210.—James, J. F., Jour. Cincinnati, Soc. Nat. Hist., 8, 1886, p. 237.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 48, fig. 1247.

Orthoceras cf. amplicameratum Clarke, Geol. Minnesota, 3, pt. 2, 1897, p. 790, pl. 47, fig. 19.

Trenton: Middleville, New York; Preston, Minnesota.

?Black River (Platteville): Mineral Point, Wisconsin.

ORTHOCERAS AMYCUS Hall. See Cycloceras amycus.

ORTHOCERAS ANCEPS Billings. See Gonioceras anceps.

ORTHOCERAS ANGULATUM Hall. See Kionoceras cancellatum.

ORTHOCERAS ANNELLUS Conrad. See Spyroceras anellus.

ORTHOCERAS ANNULATA Eaton. See Dawsonoceras annulatum.

ORTHOCERAS ANNULATUM var. AMERICANUM Whiteaves. See Dawsonoceras annulatum.

Orthoceras antenor Billings.

Orthoceras Antenor Billings, Canadian Nat. Geol., 4, 1859, p. 463.

Chazyan: Mingan Islands, Canada.

ORTHOCERAS ANTICOSTIENSE Billings. See Actinoceras anticostiense.

Orthoceras arcticum Foorde.
Cyrtoceras sp. Etheridge, Quart. Jour. Geol. Soc. London, 34, 1878, p. 608.
Orthoceras arcticum Foord, Cat. Foss. Ceph. British Mus., 1, 1888, p. 38, fig. 3.
Niagaran: Offley Island, Kennedy Channel, Arctic America.

Orthoceras arcuolineatum Ruedemann.
Orthoceras arcuolineatum Ruedemann, Bull. New York State Mus., 162, 1912, pl. 8, figs. 1, 2.
Trenton (Canajoharie): Fort Edward, New York.

Orthoceras arcuoliratum Hall.
Orthoceras arcuoliratum Hall, Pal. New York, 1, 1847, p. 198, pl. 42, figs. 7a–c.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 149, pl. 12, fig. 4.—Foord, Cat. Foss. Ceph. British Mus., 1, 1888, p. 10.—Keyes, Missouri Geol. Surv., 5, for 1894, 1895, p. 227.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 542, fig.
Trenton: Middleville and Watertown, New York.

ORTHOCERAS ATLANTICUM Barrande. See Endoceras atlanticum.

Orthoceras atticus Billings.
Orthoceras Atticus Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 312.
Canadian (Beekmantown): Stanbridge, Quebec.

Orthoceras autolycus Billings.
Orthoceras Autolycus Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 91, (adv. sheets, 1862.)
Ozarkian? (Levis—erratics): Point Levis, Quebec.

ORTHOCERAS (ORMOCERAS) BACKII Barrande. See Actinoceras beloitense and A. whitei.

ORTHOCERAS BALTEATUM Billings. See Spyroceras balteatum.

ORTHOCERAS BARTONENSIS Spencer. See Dawsonoceras annulatum.

ORTHOCERAS (ORMOCERAS) BAYFIELDI Zittel. See Actinoceras (Ormoceras) bayfieldi.

ORTHOCERAS BEAUPORTENSE Whiteaves. See Syproceras beauportense.

Orthoceras becki Billings.
Orthoceras becki Billings, Canadian Nat. Geol., 4, 1859, p. 362, fig. 11a; Geol. Canada, Geol. Surv. Canada, 1863, p. 121, fig. 35.—Lesley, Geol. Surv. Pennsylvania, Rep. P. 4, 1889, p. 543, fig.
Canadian (Romaine): Mingan Islands, Quebec.

ORTHOCERAS BELLATULUM Billings. See Kionoceras bellatulum.

ORTHOCERAS (ACTINOCERAS) BELOITENSE Whitfield. See Actinoceras beloitense.

Orthoceras beltrami Clarke.
Orthoceras beltramii Clarke, Geol. Minnesota, 3, pt. 2, 1897, p. 789, pl. 55, fig. 10.
Trenton (Prosser): Wykoff, Minnesota.

ORTHOCERAS (ACTINOCERAS) BIGSBYI of authors. See Actinoceras bigsbyi and A. beloitense.

ORTHOCERAS BILINEATUM Whitfield. See Protocycloceras whitfieldi.

ORTHOCERAS BILINEATUM Clarke. See Spyroceras bilineatum.

ORTHOCERAS (SPYROCERAS) BILINEATUM FRANKFORTENSIS. See Spyroceras bilineatum frankfortense.

Orthoceras bolivianum Hoek.
Orthoceras bolivianum Hoek, Neues Jahrb. Min., Geol., Pal., 34, 1912, p. 229.
Ordovician: Bolivia.

ORTHOCERAS BRAINERDI Seely. See Cameroceras (Proterocameroceras) brainerdi.

Orthoceras brongniarti (Troost).
Conotubularia Brongniartii Troost, 5th Geol. Rep. Tennessee, 1840, p. 49; ibid., 6th Rep., 1841, p. 176 (nom. nud.); Mem. Soc. Geol. France, 3, 1838, p. 89, pl. 9, fig. 2.
Orthoceras Brongniarti Giebel, Fauna der Vorwelt, 3, 1851, p. 242.
Trenton: Vicinity of Nashville, Tennessee.

Orthoceras brontes Billings.
Orthoceras brontes Billings, Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 83.
Niagaran (Lockport): Grimsby, Ontario.

Orthoceras bucklandi Billings.
Orthoceras bucklandii Billings, Geol. Surv. Canada, Rep. Progr. for 1853–1856, 1857, p. 330; Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 57.
Anticostian (Chicotte): Near Southwest Point, Anticosti.

Orthoceras byrnesi Miller.
Orthoceras Byrnesi Miller, Cincinnati Quart. Jour. Sci., 2, 1875, p. 126, fig. 13; Jour. Cincinnati Soc. Nat. Hist., 4, 1881, p. 319, pl. 8, fig. 8; N. A. Geol. Pal., 1889, p. 446, fig. 750.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 1034, pl. 51, fig. 4.
Maysville (Fairmount): Cincinnati, Ohio.

ORTHOCERAS CADMUS Billings. See Kionoceras cancellatum.

Orthoeras cameolare McChesney.
Orthoceras cameolare McChesney, Desc. New Fossils, 1861, p. 93.
Niagaran (Racine): Milwaukee, Wisconsin; Chicago, Illinois.

ORTHOCERAS CANADENSE Billings. See Huronia vertebralis.

ORTHOCERAS CANADENSE Miller. See Actinoceras (Paractinoceras) canadense.

ORTHOCERAS CANCELLATUM Hall. See Kionoceras cancellatum.

ORTHOCERAS CAPITOLINUM Safford. See Actinoceras cuvieri.

Orthoceras carleyi Hall and Whitfield.
Orthoceras Carleyi Hall and Whitfield, Geol. Surv. Ohio, Pal., 2, 1875, p. 98, pl. 4, fig. 19.—James, J. F., Jour. Cincinnati Soc. Nat. Hist., 8, 1886, p. 241.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 544, fig.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 1034, pl. 52, fig. 1.
Richmond: Fayetteville, Ohio.

Orthoceras carltonense Whitfield.
Orthoceras Carltonense Whitfield, Ann. Rep. for 1877, Wisconsin Geol. Surv., 1878, p. 85; Geol. Wisconsin, 4, 1882, p. 318, pl. 24, fig. 5.
Niagaran (Guelph): Carlton and Ozaukee, Wisconsin.

Orthoceras castelnaui Verneuil.
Orthoceras conicum Castelnau (not Hisinger), Essai Syst. Sil. l'Amerique Septent., 1843, p. 29, pl. 10, fig. 3.
Orthoceras Castelnaui Verneuil, in Castelnau, ibid., p. 29.
Niagaran: Drummond Island, Lake Huron.

Orthoceras cataline Billings.
Orthoceras Cataline Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 315.
Canadian (Beekmantown): Phillipsburg, Quebec.

Orthoceras cato Billings.
Orthoceras Cato Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 314.
Canadian (Beekmantown): Phillipsburg, Quebec.

Orthoceras catulus Billings.
Orthoceras Catulus Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 313.
Orthoceras cf. Catulus Matthew, Trans. Roy. Soc. Canada, 10, sec. 4, 1893, p. 106, pl. 7, fig. 14a–d.
Canadian: Phillipsburg, Quebec (Beekmantown); St. John, New Brunswick (Bretonian—Div. C3d).

Orthoceras cincinnatiense Miller.
Orthoceras Cincinnatiensis Miller, Cincinnati Quart. Jour. Sci., 2, 1875, p. 127; Jour. Cincinnati Soc. Nat. Hist., 4, 1881, p. 319, pl. 8, figs. 5, 5a.
Maysville (Fairmount): Cincinnati, Ohio.

Orthoceras clathratum Hall.
Orthoceras clathratum Hall, Pal. New York, 1, 1847, p. 201, pl. 43, figs. 4a–c.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 150.
Trenton: Middleville, New York.

Orthoceras? clavatum Hall.
Orthoceras clavatum Hall, Pal. New York, 2, 1852, p. 104, pl. 31, fig. 4a, b.
Orthoceras (Actinoceras) clavatum Foerste, Geol. Surv. Ohio, Pal., 7, 1893, p. 538, pl. 33, fig. 2; pl. 36, figs. 5a–c.
Upper Clinton: Near Mohawk, New York.
Upper Medinan (Brassfield): Near Carlisle, Ohio.

ORTHOCERAS CLINTONI Miller. See Spyroceras clintoni.

Orthoceras colon White.
Orthoceras colon White, Geogr. Geol. Expl. West 100th Merid., Prel. Rep., 1874, p. 10.
Orthoceras (Cameroceras) colon White, Rep. U. S. Geogr. Surv. West. 100th Merid., 4, War Dep., 1879, p. 56, pl. 3, figs. 5a–d.
Canadian: Fish Spring, House Range, Utah.
Holotype.—Cat. No. 17392, U.S.N.M.

ORTHOCERAS COLUMNARE Hall. See Kionoceras cancellatum.

ORTHOCERAS CONICUM Castelnau. See Orthoceras castelnaui.

ORTHOCERAS (DISCOSORUS) CONOIDEUS Barrande. See Discosorus conoideus.

Orthoceras coralliferum Hall.
Orthoceras coralliferum Hall, Pal. New York, 1, 1847, p. 312, pl. 85, fig. 3; pl. 86, figs. 1a–d.
Utica: Turin, New York.

ORTHOCERAS CORNU-ORYX Whitfield. See Orygoceras cornuoryx.

Orthoceras cornuum Billings.
Orthoceras cornuum Billings, Geol. Surv. Canada, Rep. Progr. for 1853-56, 1857, p. 329.
Chazyan (Mingan): Mingan Island, Canada.

ORTHOCERAS (KIONOCERAS) CRAWFORDI Foerste. See Kionoceras crawfordi.

ORTHOCERAS CREBESCENS Hall. See Protokionoceras crebescens.

ORTHOCERAS CREBESCENS Hall and Whitfield. See Orthoceras rectum.

ORTHOCERAS CREBRISEPTUM Billings. See Actinoceras crebriseptum.

Orthoceras crebristriatum Meek and Worthen.
Orthoceras crebristriatum Meek and Worthen, Proc. Acad. Nat. Sci. Philadelphia, 1865, p. 255; Geol. Surv. Illinois, 6, 1875, p. 503, pl. 26, fig. 2.
Niagaran (Racine): Joliet, Illinois.

ORTHOCERAS CROCUS Billings. See Cycloceras crocus.

ORTHOCERAS CUVIERI Miller. See Actinoceras cuvieri.

ORTHOCERAS DARWINI Billings. See Kionoceras darwini.

ORTHOCERAS (ACTINOCERAS) DAYTONENSIS Foerste. See Actinoceras daytonense.

Orthoceras decrescens Billings.
Orthoceras decrescens Billings, Geol. Surv. Canada, Rep. Progr. for 1853-56, 1857, p. 337.—Foord, Cat. Foss. Ceph. British Mus., 1, 1888, p. 9.
Black River (Leray): Chaudiere Rapids, St. Josephs Island, and Island of Montreal, Canada.

Orthoceras defrancii (Troost).
Conotubularia defrancii Troost, Mus. Soc. Geol. France, 3, 1838, p. 90.
Orthoceratites Defrancii Troost, ibid., p. 93, pl. 9, figs. 7, 7b; 5th Geol. Rep. Tennessee, p. 49; 6th Rep., 1841, p. 178.
Orthoceras defrancii Miller, N. A. Geol. Pal., 1889, p. 447 (gen. ref.).
Niagaran: Perry County, Tennessee.

ORTHOCERAS (KIONOCERAS) DELPHIENSIS Kindle and Breger. See Kionoceras delphiense.

Orthoceras deparcum Billings.
Orthceras deparcum Billings, Canadian Nat. Geol., 4, 1859, p. 363, fig. 111; Geol. Canada, Geol. Surv. Canada, 1863, p. 121, fig. 40.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 547, fig.—Whitfield, Bull. Amer. Mus. Nat. Hist., 3, 1890, p. 34.
Canadian (Romaine): Mingan Islands, Quebec.

ORTHOCERAS DIFFIDENS Billings. See Loxoceras diffidens.

Orthoceras drummondi Billings.
Orthoceras Drummondi Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 173, fig. 156.
Black River: Near Kingston, Ontario.

Orthoceras duseri Hall and Whitfield.
Orthoceras Duseri Hall and Whitfield, Geol. Surv. Ohio, Pal. 2, 1875, p. 97, pl. 3, figs. 2-4.—James, J. F., Jour. Cincinnati Soc. Nat. Hist., 8, 1886, p. 241.—

Orthoceras duseri—Continued.
Foord, Cat. Foss. Ceph. British Mus., 1, 1888, p. 14.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 548, figs.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res., Indiana, 1908, p. 1036, pl. 52, fig. 2-2b.
Orthoceras Fosteri Miller, Cincinnati Quart. Jour. Sci., 2, 1875, p. 127; Jour. Cincinnati Soc. Nat. Hist., 4, 1881, p. 319, pl. 8, figs. 7, 7a.
Richmond (Waynesville): Waynesville, etc., Ohio; Indiana.

Orthoceras dyeri Miller.
Orthoceras Dyeri Miller, Cincinnati Quart. Jour. Sci., 2, 1875, p. 125, text fig. 11; Jour. Cincinnati Soc. Nat. Hist., 3, 1880, p. 236, pl. 7, fig. 7.—James, J. F., ibid., 8, 1886, p. 238.—Foord, Cat. Foss. Ceph. British Mus. 1 ,1888, p. 15.—Miller, N. A. Geol. Pal., 1889, p. 447, fig. 751.
Maysville (Corryville): Cincinnati, Ohio.

Orthoceras edax Billings.
Orthoceras edax Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 349.
Canadian (Beekmantown): Township of Oxford, Ontario.

Orthoceras ekwanense Whiteaves.
Orthoceras Ekwanense Whiteaves, Geol. Surv. Canada, Ann. Rep., n. s., 14, App. F., 1904, p. 56; Geol. Surv. Canada, Pal. Foss., 3, pt. 4, 1906, p. 265, pl. 33, figs. 1, 1a.
Niagaran: Ekwan River, Canada.

Orthoceras elegantulum Dawson.
Orthoceras elegantulum Dawson, Canadian Nat. Geol., 5, 1860, p. 155, footnote; Acadian Geol., Suppl. Chap., 1860, p. 68, fig. 62; ibid., 2d ed., 1868, p. 606, fig.213.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 548, figs.
Silurian: Arisaig, Nova Scotia.

Orthoceras erraticum Foerste.
Orthoceras erraticum Foerste, Amer. Geol., 12, 1893, p. 235, fig. 1-3.
Orthoceras (Eu-Orthoceras) erraticum Foerste, Geol. Surv. Ohio, Pal., 7, 1893, p. 541, figs. 1-3, on p. 540.
Upper Medinan (Brassfield): Huffman's Quarry, near Dayton, Ohio.

Orthoceras exornatum Dawson.
Orthoceras exornatum Dawson, Canadian Nat. Geol., 5, 1860, p. 298.
Silurian: Pictou, Nova Scotia.

Orthoceras explorator Billings.
Orthoceras explorator Billings, Pal. Foss. 1, Geol. Surv. Canada, 1865, p. 253, text. fig. 238a, b.
Canadian (Quebec): Pistolet Bay, Schooner Island, Newfoundland.

ORTHOCERAS EXPLORATOR Whitfield. See Cameroceras (Proterocameroceras) brainerdi.

ORTHOCERAS FERUM Billings. See Spyroceras ferum.

Orthoceras filiforme Castelnau.
Orthoceras filiforme Castelnau, Essai Syst. l'Amerique Septent., 1843, p. 30, pl. 10, fig. 2.
Niagaran: Drummond Island, Lake Huron.

Orthoceras flavius Billings.
Orthoceras Flavius Billings, Pal. Foss., 1, Geol., Surv. Canada, 1865, p. 255.
Chazyan (Quebec—I) Point Rich, Newfoundland.

Orthoceras formosum Billings.
Orthoceras formosum Billings, Geol. Surv. Canada, Rep. Progr. for 1853–56, 1857, p. 317; Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, pp. 22, 58 (loc. ref.).
Richmond (English Head): English Head, Anticosti.

ORTHOCERAS FOSTERI Miller. See Orthoceras duseri.

Orthoceras foxense Safford.
Orthoceras Foxense Safford, Geol. Tennessee, 1869, p. 290 (nom. nud.).
Stones River: Tennessee.

Orthoceras franklinense Miller.
Orthoceras franklinensis Miller, 18th Rep. Dep. Geol. Nat. Res., Indiana, 1894, p. 322, pl. 10, fig. 3 (adv. sheets, 1892).
Niagaran: Franklin County, Indiana.

ORTHOCERAS FULGUR Billings. See Actinoceras fulgur.

ORTHOCERAS FURTIVUM Billings. See Protocycloceras(?) furtivum.

Orthoceras fusiforme Hall.
Orthoceras fusiforme Hall (not Sowerby, 1828), Pal. New York, 1, 1847, p. 60, pl. 20, fig. 1.—Hyatt, Mem. Mus. Comp. Zool., 16, 1889, p. 35, footnote.
Gomphoceras hallii D'Orbigny, Prod. Pal., 1, 1850, p. 3.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 151.
Black River: Watertown, New York.

Orthoceras glaucus Billings.
Orthoceras glaucus Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 350.
Canadian (Beekmantown): Township of Oxford, Ontario.

Orthoceras goldfussi (Troost).
Conotubularia Goldfussi Troost, Mem. Soc. Geol. France, 3, 1838, p. 90, pl. 9, fig. 3; 5th Geol. Rep. Tennessee, 1840, p. 49; 6th Rep., 1841, p. 176 (nom. nud.).
Ordovician: Vicinity of Nashville, Tennessee.

Orthoceras gorbyi Miller.
Orthoceras gorbyi Miller, 18th Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1894, p. 322, pl. 10, fig. 2 (Adv. sheets, 1892).—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 1037, pl. 52, fig. 3.
Richmond(?): Franklin County, Indiana.

ORTHOCERAS GREGARIUM Hall. See Orthoceras sociale.

Orthoceras griffithi Haughton.
Orthoceras Griffithi Haughton, Jour. Geol. Soc. Dublin, 1, 1859, p. 239, pl. 5, fig. 1.—Foord, Cat. Foss. Ceph. British Mus., 1, 1888, p. 41.
Niagaran: Griffiths Island, Barrow Strait, Arctic America.

Orthoceras hæsitans Billings.
Orthoceras hæsitans Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 254.
Chazyan (Quebec-I): Point Rich and Table Head, Newfoundland.

Orthoceras hageri Hall.
Orthoceras hageri Hall, Geol. Vermont, 1861, p. 718.
Canadian (Beekmantown): West Haven, near Whitehall, Vermont.

Orthoceras hallanum Miller.
Orthoceras Halli Miller (not Barrande), Cincinnati Quart. Jour. Sci., 2, 1875, p. 128, fig. 14.—Foord, Cat. Foss. Ceph. British Mus., 1, 1888, p. 15.
Orthoceras hallanum Miller, N. A. Geol. Pal., 1889, p. 448, fig. 752.
Richmond: Clinton County, Ohio.

ORTHOCERAS HALLI Miller. See Orthoceras hallanum.

ORTHOCERAS (DAWSONOCERAS) HAMMELLI Foerste. See Dawsonoceras hammelli.

Orthoceras hanoverense Foerste.
Orthoceras (Eu-orthoceras) hanoverensis Foerste, Proc. Boston Soc. Nat. Hist., 24, 1889, p. 280, pl. 7, fig. 6; Geol. Surv. Ohio Pal., 7, 1893, p. 543, p. 32, fig. 6, pl. 35, fig. 5.
Upper Medinan (Brassfield): Hanover, Indiana; Dayton and Todds Fork, near Wilmington, Ohio.

Orthoceras harperi Miller.
Orthoceras Harperi Miller, Cincinnati Quart. Jour. Sci., 2, 1875, p. 128; Jour. Cincinnati Soc. Nat. Hist., 4, 1881, p. 319, pl. 8. figs. 6, 6a.
Maysville (Corryville): Cincinnati, Ohio.

ORTHOCERAS HASTATUM Billings. See Tripteroceras hastatum.

Orthoceras henrietta Dwight.
Orthoceras Henrietta Dwight, Amer. Jour. Sci. Arts, 3d ser., 27, 1884, p. 256, pl. 7, figs. 13, 14, 14a.
Canadian (Beekmantown): Rochdale, New York.

Orthoceras herculaneus Verneuil. Not recognized.
Orthoceras Herculaneus Verneuil, Bull. Soc. Geol. France, 2d ser., 4, 1847, p. 559.
Trenton: Galena, Illinois.

Orthoceras hercules Castelnau. Not recognized.
Orthoceras Hercules Castelnau, Essai Syst. Sil. l'Amerique Septent., 1843, p. 29.
Niagaran: Drummond Island, Lake Huron.

Orthoceras hindei James.
Orthoceras Hindei James, Paleontologist, No. 1, 1878, p. 6.—James, J. F., Cincinnati Soc. Nat. Hist., 8, 1886, p. 240, pl. 4, figs. 4a–d.
Eden: Cincinnati, Ohio.
Observation.—Not recognized. Founded on fragments of several species.

Orthoceras (Ormoceras?) hitzi Foerste.
Orthoceras (Ormoceras?) hitzi Foerste, Bull. Sci. Lab. Denison Univ., 16, 1910, p. 77, pl. 1, fig. 3; pl. 2, fig. 22.
Richmond (Whitewater-Saluda): Madison, Indiana, and northern Kentucky.

ORTHOCERAS HOYI McChesney. See Kionoceras cancellatum.

Orthoceras hudsonicum Ruedemann.
Orthoceras hudsonicum Ruedemann, Bull. New York State Mus., 162, 1912, pl. 8, figs. 3–10.
Trenton (Canajoharie): Alplans Creek, Saratoga County, New York.

Orthoceras huronense Billings.
Orthoceras Huronense Billings, Geol. Surv. Canada, Rep. Progr. for 1853–1856, 1857, p. 337.
Trenton(?): St. Josephs Island, Lake Huron.

Orthoceras ignotum Foerste.

Orthoceras (Eu-orthoceras) ignotum Foerste, Proc. Boston Soc. Nat. Hist., 24, 1889, p. 279, pl. 7, fig. 4; Geol. Surv. Ohio, 7, 1893, p. 539, pl. 32, fig. 4; pl. 36, figs. 6a–c; figs. 5–7, p. 540.

Orthoceras ignotum Foerste, Amer. Geol., 12, 1893, p. 236, figs. 5–7; Geol. Surv. Ohio, Pal., 7, 1893, p. 541, figs. 5–7 on p. 540.

Upper Medinan (Brassfield): Hanover, Indiana; near Dayton, Ohio.

Orthoceras imbricatum (Wahlenberg).

Orthoceratites imbricatus Wahlenburg, Nova Acta Upsal., 1827, p. 89.

Orthoceras imbricatum Sowerby in Murchison's Sil. Syst., 1839, p. 620, pl. 9, fig. 2.—Hall, Pal. New York, 2, 1852, p. 291, pl. 61, figs. 4a–c; pl. 62, figs. 1–3.—Rogers, Geol. Pennsylvania, 2, pt. 2, 1858, p. 823, fig. 636.—Etheridge, Quart. Jour. Geol. Soc. London, 34, 1878, p. 607.

Silurian: Europe; Lockport and Rochester, New York; Cape Louis Napoleon, Arctic America.

ORTHOCERAS INCEPTUM Foerste. See Cycloceras inceptum.

ORTHOCERAS INCEPTUM var. ACCELERATUM Foerste. See Cycloceras inceptum acceleratum.

Orthoceras indagator Billings.

Orthoceras indagator Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 349.

Canadian (Romaine): Mingan Islands, Quebec.

ORTHOCERAS INFELIX Billings. See Actinoceras infelix.

ORTHOCERAS INSULARE Barrande. See Endoceras insulare.

ORTHOCERAS IRREGULARE McChesney. See Kionoceras cancellatum.

ORTHOCERAS JAMESI Hall and Whitfield. See Spyroceras jamesi.

Orthoceras jolietense Meek and Worthen.

Orthoceras jolietense Meek and Worthen, Proc. Acad. Nat. Sci. Philadelphia, 1865, p. 256; Geol. Surv. Illinois, 6, 1875, p. 465, pl. 26, fig. 5.—Keyes, Missouri Geol. Surv., 5, 1894, p. 227.

Niagaran (Racine): Joliet, Illinois.

Orthoceras junceum Hall.

Orthoceras junceum Hall, Pal. New York, 1, 1847, p. 204, pl. 47, figs. 3a–f.—Chamberlin, Geol. Wisconsin, 1, 1883, p. 158, fig.—J. F. James, Jour. Cincinnati Soc. Nat. Hist., 8, 1886, p. 238.—Foord, Cat. Foss. Ceph. British Mus., 1, 1888, p. 10.—Clarke, Geol. Minnesota, 3, pt. 2, 1897, p. 790.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 1037, pl. 51, figs. 5, 5c.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 48, fig. 1246.

Trenton: Watertown, New York.

Black River: Minneapolis and Fountain, Minnesota (Decorah); Janesville, Wisconsin (Platteville).

ORTHOCERAS (KIONOCERAS) KENTLANDENSIS Kindle and Breger. See Kionoceras kentlandense.

ORTHOCERAS LÆVE Hall. See Orthoceras sublæve.

ORTHOCERAS LAMARCKI Billings. See Protocycloceras lamarcki.

Orthoceras lamellosum Hall.

Orthoceras lamellosum Hall, Pal. New York, 1, 1847, p. 312, pl. 86, figs. 2a–e.—Chapman, Canadian Jour., n. s., 8, 1863, p. 20, fig. 127; Expos. Min., Geol. Canada, 1864, p. 128, fig. 127; p. 172, fig. 192.—Nicholson, Rep. Pal. Prov. Ontario, pt. 2, 1875, p. 36, fig. 12b.—Ami, Trans. Ottawa Field Nat. Club, 1, 1882, p. 65.—Foord, Cat. Foss. Ceph. British Mus., 1, 1888, p. 14.

Cincinnatian (Pulaski): Near Pulaski, Turin, etc., New York.

ORTHOCERAS LAPHAMI McChesney. See Dawsonoceras annulatum.

ORTHOCERAS LAQUEATUM Hall. See Kionoceras laqueatum.

ORTHOCERAS (ACTINOCERAS) LATA-NUMMULATUS Foerste. See Actinoceras latonummulatum.

Orthoceras latiannulatum Hall.

Orthoceras latiannulatum Hall, Nat. Hist. New York, Pal., 1, 1847, p. 204, pl. 54, figs. 1a, b.

Trenton: Middleville, New York.

Orthoeras lentum Ruedemann.

Orthoceras lentum Ruedemann, Bull. New York State Mus., 90, 1906, p. 433, pl. 14, figs. 1–3, text fig. 12.

Chazyan (Valcour): East shore of Valcour Island, New York.

Orthoceras lepidodendroides Parks.

Orthoceras lepidodendroides Parks in Tyrrell, 22d Rep. Ontario Bur. Mines, 1913, p. 32.

Mohawkian or Richmond: Shamattawa River, Manitoba.

ORTHOCERAS LESUEURI Clarke. See Cycloceras lesueuri.

ORTHOCERAS LINEOLATUM McChesney. See Kionoceras cancellatum.

Orthoceras lineolatum (Hall).

Endoceras proteiforme var. lineolatum Hall, Pal. New York, 1, 1847, p. 211, pl. 45, figs. 4a–e; pl. 46, figs. 1a, b, c, 2a, b, 3; pl. 47, figs. 4a–e; pl. 59, figs. 3, 3a.

Orthoceras lineolatum Clarke and Ruedemann (not Phillips, 1841), Bull. New York State Mus., 65, 1903, p. 628 (gen. ref.).

Trenton: Middleville, etc., New York.

ORTHOCERAS (ENDOCERAS) LONGISSIMUM Roemer. See Vaginoceras longissimum.

Orthoceras loxias Hall.

Othoceras loxias Hall, 20th Rep. New York State Cab. Nat. Hist., 1868, p. 380, pl. 19 (10), fig. 7 (rev. ed., 1870).

?Silurian: Green Bay, Wisconsin.

Orthoceras ludlowense Miller and Faber.

Orthoceras ludlowense Miller and Faber, Jour. Cincinnati Soc. Nat. Hist., 17, 1894, p. 139, pl. 7, figs. 1, 2.

Trenton (Upper): West Covington, Kentucky.

ORTHOCERAS LYCUS Hall. See Oncoceras lycus.

Orthoceras lyelli Billings.

Orthoceras Lyelli Billings, Geol. Surv. Canada, Rep. Progr. for 1853–1856, 1857, p. 320.—Billings, Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 22 (loc. ref.).

Richmond (Charleton): East of Salmon River, Anticosti.

ORTHOCERAS MAGNISULCATUM Billings. See Kionoceras magnisulcatum.

Orthoceras marginale Owen. Not recognized.
Orthoceras marginale Owen, Geol. Expl. Iowa, Wisconsin, Illinois, 2d ed., 1844, p. 70, pl. 16, fig. 6.
Black River (Platteville): Wisconsin.

ORTHOCERAS MARO Billings. See Spyroceras maro.

Orthoceras medon Billings.
Orthoceras Medon Billings, Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 57.
Anticostian (Chicotte): Southwest Point, Anticosti.

ORTHOCERAS MEDULLARE Hall. See Protokionoceras medullare.

Orthoceras meeki Miller.
Orthoceras meeki, Miller, Quart. Jour. Sci., 2, 1875, p. 126, text fig. 12; N. A. Geol. Pal., 1889, p. 449, fig. 753.
Maysville (Fairmount): Cincinnati, Ohio.

Orthoceras menelaus Billings.
Orthoceras Menelaus Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 36. (Adv. sheets, 1862.)
Black River: Wolfe Island, near Kingston and Pointe Claire, Island of Montreal, Canada.

ORTHOCERAS (LOXOCERAS) MILLERI Foerste. See Loxoceras milleri.

Orthoceras minganense Billings.
Orthoceras minganense Billings, Geol. Surv. Canada, Rep. Progr. for 1853-1856, 1857, p. 319; Canadian Nat. Geol., 4, 1859, p. 463 (loc. occ.).
Chazyan (Mingan): Mingan Islands, Canada.

Orthoceras minnesotense Sardeson.
Orthoceras minnesotense Sardeson, Bull. Minnesota Acad. Nat. Sci., 4, 1896, p. 77, pl. 3, figs. 11, 12.
St. Peter: South St. Paul, Minnesota.

ORTHOCERAS MISSISQUOI Billings. See Cyrtoceras missisquoi.

Orthoceras modestum Ruedemann.
Orthoceras modestum Ruedemann, Bull. New York State Mus., 90, 1906, p. 436, fig. 14, pl. 12, figs. 1-3.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 48.
Chazyan (Valcour): Valcour Island and near Chazy, New York; Isle La Motte, Vermont.

Orthoceras mohri Miller.
Orthoceras Mohri Miller, Cincinnati Quart. Jour. Sci., 2, 1875, p. 124, fig. 10.—James, J. F., Jour. Cincinnait Soc. Nat. Hist., 8, 1886, p. 238.—Foord, Cat. Foss. Ceph. British Mus., 1, 1888, p. 15.—Miller, N. A. Geol. Pal., 1889, p. 449, fig. 564.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 1038, pl. 51, fig. 3.
Richmond: Versailles, Indiana.

ORTHOCERAS MONILIFORME Hall. See Loxoceras moniliforme.

ORTHOCERAS MONTREALENSIS Billings. See Endoceras montrealense.

Orthoceras multicameratum Emmons.

Orthoceras multicameratum (Conrad MS.) Emmons, Nat. Hist. New York Geol., 2d Dist., 1842, p. 382, fig. 93.—Hall, Pal. New York, 1, 1847, p. 45; pl. 11, figs. 1a–c.—Emmons, Amer. Geol., 1, pt. 2, 1855, p. 150, pl. 4, fig. 8.—Rogers, Geol. Pennsylvania, 2, pt. 2, 1858, p. 817, text fig. 596.—Billings, Canadian Nat. Geol., 4, 1859, p. 363, text fig. 11b.—Billings, Canadian Nat. Geol., 4, 1859, p. 462 (loc. occ.).—Emmons, Man. Geol., 1860, p. 95, text fig. 82.—Lincklaen, 14th Rep. New York State Cab. Nat. Hist., 1861, p. 41, pl. 2, fig. 12.—Hitchcock, Geol. Vermont, 1, for 1861, 1862, p. 298, text fig. 212.—Walcott, Mon. U. S. Geol. Surv., 8, 1884, p. 86, pl. 12, fig. 3.—Foord, Cat. Foss. Ceph. British Mus., 1, 1888, p. 16.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 553, figs.—Clarke, Geol. Minnesota, 3, pt. 2, 1897, p. 789.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 48, fig. 1245.

Black River: Watertown, etc., New York; Minneapolis, Fountain, etc., Minnesota; Mineral Point, Wisconsin; Rockton, Illinois.

Plesiotype.—Cat. No. 17381, U.S.N.M. (Walcott).

Orthoceras multilineatum (Emmons).

Orthoceratites multilineatus Emmons, Nat. Hist. New York Geol., 2, 1842, p. 397, fig. 7.

Orthoceras multilineatum Owen, Amer. Jour. Sci. Arts, 47, 1844, p. 369, fig. 7; p. 368, fig.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 553, fig.

Trenton: New York.

Orthoceras multiseptum Hall.

Orthoceras multiseptum Hall, Pal. New York, 2, 1852, p. 14, pl. 4 (bis), figs. 8a, b.—Grabau, Bull. New York State Mus., 45, 1901, p. 215, fig. 146; Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 215, fig. 146.

Upper Medinan: Lockport and Medina, New York.

ORTHOCERAS MURRAYI Billings. See Jovellania murrayi.

Orthoceras niagarense Hall.

Orthoceras niagarense Hall, 20th Rep. New York State Cab. Hist., 1868, pl. 20, fig. 3; rev. ed., 1870, p. 416, pl. 20, fig. 3.

Orthoceras (Geisonoceras) niagarense Kindle and Breger, 28th Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1904, p. 471.

Niagaran: Waukesha and Pewaukee, Wisconsin (Racine); near Anderson, Indiana.

ORTHOCERAS NICOLLETI Clarke. See Cycloceras nicolleti.

ORTHOCERAS NODOCOSTATUM McChesney. See Dawsonoceras annulatum.

ORTHOCERAS (CYCLOCERAS) NOVA-CARLISLENSIS Foerste. See Cycloceras novacarlislense.

ORTHOCERAS NUMMULARIUM Etheridge. See Actinoceras backi.

Orthoceras oberon Billings.

Orthoceras oberon Billings, Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 82.

Niagaran (Lockport): Grimsby Township, Ontario.

Orthoceras obstructum Newell.

Orthoceras obstructum Newell, Proc. Boston Soc. Nat. Hist., 23, 1866, pp. 467, 468, fig.

Niagaran: Wabash City, Indiana.

ORTHOCERAS OLORUS Hall. See Cycloceras olorus.

ORTHOCERAS OLORUS BAFFINENSIS Schuchert. See Cycloceras olorus baffinensis.

ORTHOCERAS OMMANEYI Salter. See Endoceras ommaneyi.

Orthoceras oneidaense Walcott.
Orthoceras Oneidaense Walcott, Trans. Albany Inst. 10, 1883 (adv. sheets, 1879), p. 22, pl. 1, figs. 7, 7a.
Utica: Trenton, Oneida County, New York.

Orthoceras ordinatum Billings.
Orthoceras ordinatum Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 350.
Canadian (Beekmantown): St. Anne and Township of Oxford, Ontario.

Orthoceras ortoni Meek.
Orthoceras Ortoni Meek, Proc. Acad. Nat. Sci. Philadelphia, 1872, p. 330; Pal. Ohio, 1, 1873, p. 155, pl. 13, fig. 8.—Miller, Cincinnati Quart. Jour. Sci., 2, 1875, p. 130.—James, J. F., Cincinnati Soc. Nat. Hist., 8, 1886, p. 239.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 555, fig.
Eden (Southgate?): Cincinnati, Ohio.

ORTHOCERAS ORUS Hall. See Kionoceras cancellatum.

Orthoceras ottawaense Billings.
Orthoceras ottawaense Billings, Geol. Surv. Canada, Rep. Progr. for 1853-1856, 1857, p. 331.
Black River (Leray): La Petite Chaudiere Rapids, Ottawa River, Canada.

Orthoceras ozarkense Shumard.
Orthoceras Ozarkense Shumard, Trans. Acad. Sci. St. Louis, 2, 1863, p. 107.—Keyes, Missouri Geol. Surv., 5, 1894, 1895, p. 226.
Canadian (Yellville): Ozark County, Missouri.

ORTHOCERAS PERANNULATUM Billings. See Cycloceras crocus.

Orthoceras perparvum Billings.
Orthoceras perparvum Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 27 (adv. sheets 1862).
Black River: Pallideau Islands, Lake Huron.

ORTHOCERAS PERROTI Clarke. See Cycloceras perroti.

Orthoceras perseus Billings.
Orthoceras perseus Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 313.
Canadian (Beekmantown): Phillipsburg, Quebec.

ORTHOCERAS PERSIPHONATUM Billings. See Huronia persiphonatum.

Orthoceras pertinax Billings.
Orthoceras pertinax Billings, Canadian Nat. Geol., 5, 1860, p. 175.
Black River (Leray): Pauquettes Rapids, Ottawa River, Canada.

Orthoceras pictoense Dawson.
Orthoceras Pictoense Dawson, Canadian Nat., n. s., 9, 1880, p. 343.
Silurian: Pictou, Nova Scotia.

Orthoceras pileolum Billings.
Orthoceras pileolum Billings, Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 58.
Anticostian (Chicotte): Near Jupiter River, Anticosti.

Orthoceras piscator Billings.

Orthoceras piscator Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 251, fig. 237.

Chazyan (Quebec—I-N): Table Head and Point Rich, Newfoundland.

Orthoceras piso Billings.

Orthoceras Piso Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 168 (adv. sheets, 1862).

Richmond: Cape Smyth, Manitoulin Island, Lake Huron.

ORTHOCERAS PLANOCONVEXUM Hall. See Tripteroceras planoconvexum.

Orthoceras porteri Schuchert.

Orthoceras porteri Schuchert, Proc. U. S. Nat. Mus., 22, 1900, p. 169, pl. 12, figs. 23–25.

Mohawkian: Head of Frobisher Bay, Baffin Land.

Holotype.—Cat. No. 28194, U.S.N.M.

ORTHOCERAS (HURONIA) PORTLOCKI Barrande. See Huronia portlocki.

Orthoceras priamus Billings.

Orthoceras Priamus Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 253, figs. 239a, b.

Orthoceras cf. Priamus Matthew, Trans. Roy. Soc. Canada, 10, sec. 55, 1893, p. 106, pl. 7, figs. 13a, b.

Chazyan (Quebec—L, M): Point Rich and Table Head, Newfoundland.

?Canadian (Bretonian—Div. C3d): St. John, New Brunswick.

Orthoceras? primigenium Vanuxem.

Orthoceras primigenium Vanuxem, Geol. New York, 3d Dist., 1842, p. 36, fig. 4.—Emmons, Nat. Hist. New York, Geol., 2d Dist., 1842, p. 179, fig. 4.—Owen, Amer. Jour. Sci. Arts, 47, 1844, pp. 357, 358, fig. 4.—Hall, Pal. New York, 1, 1847, p. 13, pl. 3, fig. 11, 11a.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 148.—Whitfield, Bull. Amer. Mus. Nat. Hist., 2, 1889, p. 56, pl. 10, fig. 1.—Lesley Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 556, figs.—Calvin, Bull. Lab. Nat. Hist. State Univ. Iowa, 2, 1892, p. 193; Amer. Geol., 10, 1892, p. 147.—Cleland, Amer. Pal., Bull. 13, 1900, p. 20; ibid., 4, 1903, p. 14, pl. 3, figs. 8, 9.—Ruedemann, Bull. New York State Mus., 90, 1906, p. 504.—Seely, Vermont State Geol., Rep. 7, 1910, p. 301, fig. 29.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 47.

Canadian (Beekmantown): Near Fort Plain, Beekmantown, Fort Hunter, etc., New York; Iowa.

Orthoceras progressum Ruedemann.

Orthoceras progressum Ruedemann, Bull. New York State Mus., 90, 1906, p. 434, pl. 12, figs. 5, 6; fig. 13.

Chazyan (Valcour): Valcour Island, New York.

ORTHOCERAS PROPINQUUM Billings. See Actinoceras fulgur.

Orthoceras punctostriatum Hall.

Orthoceras punctostriatum Hall, Canadian Nat. Geol., 5, 1860, p. 154, fig. 15.—Dawson, Acadian Geol., Suppl. Chap., p. 68, fig. 61; 2d ed., 1868, p. 605, fig. 212.

Silurian: Arisaig, Nova Scotia.

Orthoceras pylades Billings.

Orthoceras Pylades Billings, Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 84.

Niagaran (Lockport): Grimsby, Ontario.

ORTHOCERAS PYTHON Billings. See Actinoceras (Deiroceras) python.

ORTHOCERAS RAPAX Billings. See Endoceras rapax.

Orthoceras raptor Billings.

Orthoceras raptor Billings, Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 57.

Anticostian (Jupiter River): Near Jupiter River, Anticosti.

Orthoceras recedens Barrande.

Orthoceras recedens Barrande, Syst. Sil. du Boheme, 4me ser., 2, 1870, pl. 433, figs. 3, 4.

Ordovician: Newfoundland.

ORTHOCERAS RECTIANNULATUM Hall. See Cycloceras? rectiannulatum.

Orthoceras recticameratum Hall.

Orthoceras recticameratum Hall, Pal. New York, 1847, p. 46, pl. 11, fig. 1d.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 48.

Black River (Lowville): Watertown, etc., New York.

Orthoceras rectum Worthen.

Orthoceras rectum Worthen, Geol. Surv. Illinois, 6, 1875, p. 504, pl. 26, fig. 3.—Clarke and Ruedemann, Mem. New York State Mus., 5, 1903, p. 78, pl. 12, fig. 9.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 48.

Orthoceras crebescens Hall and Whitfield, Geol. Ohio, 2, 1875, p. 148, pl. 9, fig. 2.

Niagaran: Joliet, Illinois (Racine); Shelby, New York, and Cedarville, Ohio (Guelph).

Orthoceras rectum junius Foerste.

Orthoceras (Eu-orthoceras) rectum var. junior Foerste, Proc. Boston Soc. Nat. Hist., 24, 1889, p. 278, pl. 7, figs. 1, 2.

Orthoceras (Eu-orthoceras) rectum var. junius Foerste, Geol. Surv. Ohio, Pal. 7, 1893, p. 32, figs. 1, 2.

Upper Medinan (Brassfield): Hanover, Indiana.

Orthoceras remus Billings.

Orthoceras remus Billings, Cat. Sil. Foss. Anticosti Geol. Surv. Canada, 1866, p. 85.

Niagaran (Lockport): Grimsby, Ontario.

Orthoceras repens Billings.

Orthoceras repens Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 312.

Canadian (Beekmantown): Phillipsburg, Quebec.

Orthoceras rhythmoides (Foerste).

Orthoceras (Eu-orthoceras) rhythmoides Foerste, Proc. Boston Soc. Nat. Hist., 24, 1889, p. 279, pl. 8, fig. 2.

Upper Medinan (Brassfield): Near Carlisle, Ohio.

ORTHOCERAS RICHARDSONI Barrande. See Actinoceras richardsoni.

Orthoceras rigidum Hall.

Orthoceras rigidum Hall, Pal. New York, 3, 1861, p. 344, pl. 70, figs. 3a–d.—Billings, Proc. Portland Soc. Nat. Hist., 1, 1863, p. 119.—Newell, Proc. Boston Soc. Nat. Hist., 23, 1888, p. 467.—Maynard, Maryland Geol. Surv., Low. Dev., 1913, p. 488, pl. 88, fig. 5

Helderbergian: Herkimer County, New York (Manlius transition); Devil's Backbone, Maryland (Keyser).

?Niagaran: Peru, Indiana.

Orthoceras rogersense Foerste.

Orthoceras rogersensis Foerste, Jour. Cincinnati Soc. Nat. Hist., 21, 1914, p. 143, pl. 1, figs. 17a, b.

Trenton (Upper): Rogers Gap, Kentucky.

ORTHOCERAS ROTTERMUNDI Barrande. See Endoceras rottermundi.

ORTHOCERAS ROTULATUM Billings. See Actinoceras rotulatum.

Orthoceras sayi Billings.

Orthoceras Sayi Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 315.

Canadian (Beekmantown): Phillipsburg, Quebec.

Orthoceras scalariforme Schuchert.

Orthoceras scalariformis Schuchert, Proc. U. S. Nat. Mus., 22, 1900, p. 170, pl. 12, figs. 17, 18.

Mohawkian: Head of Frobisher Bay, Baffin Land.

Holotype.—Cat. No. 28195, U.S.N.M.

ORTHOCERAS SCAMMONI McChesney. See Kionoceras cancellatum.

Orthoceras schucherti Maynard.

Orthoceras schucherti Maynard, Maryland Geol. Surv., Low. Dev., 1913, p. 487, pl. 88, fig. 4.

Helderbergian (Keyser): Cumberland, Maryland.

ORTHOCERAS SEDGWICKI Billings. See Actinoceras sedgwicki.

Orthoceras selkirkense Whiteaves.

Orthoceras Selkirkense Whiteaves, Trans. Royal Soc. Canada, 9, sec. 4, 1892, p. 82, pl. 8, figs. 2, a, b; Pal. Foss., Geol. Surv. Canada, 3, pt. 2, 1895, p. 123 (loc. occ.) ; ibid., pt. 3, 1897, p. 212.

Black River or Richmond: East Selkirk, Manitoba.

Orthoceras selwyni Billings.

Orthoceras selwyni Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 161 (adv. sheets, 1862).—Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 2, 1895, p. 98.

Niagaran (Guelph): Galt, Ontario.

ORTHOCERAS SEMIPLANATUM Whiteaves. See Jovellania semiplanata.

ORTHOCERAS SERVILE Billings. See Tripteroceras servile.

ORTHOCERAS SHUMARDI Billings. See Geisonoceras shumardi.

Orthoceras sieboldi Billings.

Orthoceras Sieboldi Billings, Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, pp. 23, 58.

Richmond (English Head) and Gamachian: Near West End Light House and Gamache Bay, Anticosti.

ORTHOCERAS SIMPSONI Billings. See Narthecoceras simpsoni.

Orthoceras simulator Hall.
Orthoceras simulator Hall, 28th Rep. New York State Mus. Nat. Hist., doc. ed., 1877, pl. 27, figs. 11, 12; mus. ed., 1879, p. 179, pl. 27, figs. 11, 12; 11th Ann. Rep. Indiana Dep. Geol. Nat. Hist., 1882, p. 322, pl. 28, figs. 11, 12; pl. 33, figs. 1, 2.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 557, figs.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 49.
Niagaran (Waldron): Waldron, Indiana.

Orthoceras sociale Hall.
Orthoceras gregarium Hall (not Sowerby, 1839), Rep. Supt. Geol. Surv. Wisconsin, 1861, p. 46.
Orthoceras sociale Hall in Miller N. A. Pal. Foss., 2d ed., 1877, p. 245.—J. F. James, Amer. Geol., 5, 1890, p. 355.—Whitfield, Mem. Amer. Mus. Nat. Hist., 1, pt. 2, 1895, p. 71, pl. 8, figs. 16-23.—Clarke, Geol. Minnesota, 3, pt. 2, 1897, p. 789, pl. 55, fig. 7.
Orthoceras (Geisonoceras) sociale Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 48, fig. 1248.
Richmond (Maquoketa): Maquoketa Creek, etc., Iowa; Scales Mound, etc., Illinois.

Orthoceras sordidum Billings.
Orthoceras sordidum Billings, Canadian Nat. Geol., 4, 1859, p. 363, fig. 11i, k; Geol. Canada, Geol. Surv. Canada, 1863, p. 121, fig. 39a, b.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 558, figs.
Canadian (Romaine): Mingan Islands, Quebec.

ORTHOCERAS SORDIDUM Billings. See Endoceras montrealense.

ORTHOCERAS (HURONIA) SPHÆROIDALE Stokes. See Actinoceras sphæroidale.

Orthoceras spissiseptum Dwight.
Orthoceras spissiseptum Dwight, Amer. Jour. Sci. Arts, 3d ser., 27, 1884, p. 256, pl. 7, fig. 12.
Canadian (Beekmantown): Rochdale, New York.

Orthoceras (Spyroceras?) spyroceroides Foerste.
Orthoceras (Spyroceras?) spyroceroides Foerste, Geol. Surv. Ohio, Pal. 7, 1893, p. 545.
Upper Medinan (Brassfield): Near New Carlisle, Ohio.

Orthoceras striælineatum McChesney.
Orthoceras striælineatum McChesney, Desc. New Fossils, 1861, p. 94.
Niagaran (Racine): Chicago, Illinois.

Orthoceras strigatum Hall.
Orthoceras strigatum Hall, Pal. New York, 1, 1847, p. 205, pl. 56, figs. 1a-f.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 150.—Hitchcock, Geol. Vermont, 1, 1861, 1862, p. 298, fig. 211.
Trenton: Middleville, New York.

ORTHOCERAS STRIX Hall and Whitfield. See Kionoceras strix.

ORTHOCERAS SUBARCUATUM HALL. See Loxoceras moniliforme and Spyroceras clintoni.

Orthoceras subbaculum Meek and Worthen.
Orthoceras subbaculum Meek and Worthen, Proc. Acad. Nat. Sci. Philadelphia, 1865, p. 256,
Niagaran: (Racine): Joliet, Illinois.

ORTHOCERAS SUBCANCELLATUM Hall. See Kionoceras cancellatum.

Orthoceras sublæve D'Orbigny.
Orthoceras laeve Hall (not Fleming), Geol. New York, 4, 1843, p. 137, fig. 2; p. 138; tab. ill. 25, fig. 2.—Owen, Amer. Jour. Sci. Arts., 2d ser., 1, 1846, p. 46, fig. 2.
Orthoceras sublæve D'Orbigny, Prodr. Pal., 1, 1850, p. 28.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 559, fig.
Niagaran (Guelph): Newark, Wayne County, New York.

Orthoceras tenerum Billings.
Orthoceras tener Billings, Canadian Nat. Geol., 5, 1860, p. 174.
Black River (Leray): Pauquettes Rapids, Ottawa River, Canada.

ORTHOCERAS (ORMOCERAS) TENUIFILUM James. See Actinoceras tenuifilum.

ORTHOCERAS TENUISEPTUM Hall. See Cameroceras tenuiseptum.

Orthoceras tenuisiphonatum Foerste.
Orthoceras tenui-siphonatum Foerste, Proc. Boston Soc. Nat. Hist., 24, 1889, p. 278.
Orthoceras (Eu-Orthoceras?) virgulatum Foerste, Proc. Boston Soc. Nat. Hist., 24, 1889, p. 276, pl. 7, fig. 5; Geol. Surv. Ohio, Pal., 7, 1893, p. 543, pl. 32, fig. 5; pl. 35, fig. 3.
Upper Medinan (Brassfield): Soldiers' Home, Dayton, Ohio.

Orthoceras tenuistriatum (Hall).
Endoceras proteiforme var. tenuistriatum Hall, Pal. New York, 1, 1847, p. 209, pl. 45, figs. 1a, b; pl. 47, figs. 1a, b; 2a–e; pl. 59, figs. 2a, b.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, p. 217, figs.
Orthoceras tenuistriatum Clarke, Geol. Minnesota, 3, pt. 2, 1897, p. 788, pl. 55, figs. 4, 6.—Weller, Geol. Surv. New Jersey, Pal., 3, 1903, p. 188, pl. 13, figs. 1, 2.
Trenton: Middleville, etc., New York; Jacksonburg, New Jersey.
Black River (Platteville): Cannon Falls, Minnesota.

Orthoceras tenuitextum (Hall).
Endoceras proteiforme var. tenuitextum Hall, Pal. New York, 1, 1847, p. 210, pl. 45, figs. 2a, b, 3a, b, 5a–c; pl. 48, figs. 2a–c; pl. 59, figs. 1a, b.
Orthoceras tenuitextum Weller, Geol. Surv. New Jersey, Pal., 3, 1903, p. 189, pl. 13, figs. 3, 4.
Trenton: Middleville, etc., New York; Jacksonburg, New Jersey.

ORTHOCERAS TERETIFORME Hall. See Cycloceras teretiforme.

Orthoceras textile Hall.
Orthoceras textile Hall, Pal. New York, 1, 1847, p. 199, pl. 43, figs. 1a, b.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 150.
Trenton: Watertown, New York.

Orthoceras tityrus Billings.
Orthoceras Tityrus Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 316.
Canadian (Beekmantown): Phillipsburg, Quebec.

Orthoceras transversum Miller.
Orthoceras transversum Miller, Cincinnati Quart. Jour. Sci., 2, 1875, p. 129.—James, J. F., Jour. Cincinnati Soc. Nat. Hist., 8, 1886, p. 239.—Ulrich, Amer. Geol., 1, 1888, p. 325.—Foord, Cat. Foss. Ceph. British Mus., 1, 1888, p. 15.—Miller, N. A. Geol. Pal., 1889, p. 452, fig. 755.
Eden: Cincinnati, Ohio, and vicinity.

ORTHOCERAS TRUSITUM Clarke and Ruedemann. See Protokionoceras trusitum.

Orthoceras turbidum Hall and Whitfield.
Orthoceras turbidum Hall and Whitfield, Geol. Surv. Ohio, Pal., 2, 1875, p. 100, pl. 3, fig. 1.—James, J. F., Jour. Cincinnati Soc. Nat. Hist., 8, 1886, p. 240.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 560, fig.
Maysville (Fairmount): Cincinnati, Ohio, and vicinity.

ORTHOCERAS (ACTINOCERAS) TURGIDO-NUMMULATUM Foerste. See Actinoceras turgidonummulatum.

Orthoceras tyronense Foerste.
Orthoceras tyronensis Foerste, Bull. Sci. Lab. Denison Univ., 17, 1912, p. 129, pl. 10, figs. 5a, b.
Black River (Lowville): High Bridge, Kentucky.

ORTHOCERAS UNDULATUM Hall. See Dawsonoceras annulatum.

Orthoceras undulostriatum Hall.
Orthoceras undulostriatum Hall, Pal. New York, 1, 1847, p. 202, pl. 43, figs. 7a-k.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 150.—Salter, Quart. Jour. Geol. Soc. London, 15, 1859, p. 375, pl. 13, figs. 25, 26.
Trenton: Middleville, New York.

Orthoceras unionense Worthen.
Orthoceras Unionensis Worthen, Geol. Surv. Illinois, 6, 1875, p. 505, pl. 26, fig. 4.—Newell, Proc. Boston Soc. Nat. Hist., 23, 1888, p. 467.
Niagaran: Union County, Illinois; Wabash, Indiana.

Orthoceras(?) vagum Ruedemann.
Orthoceras(?) vagum Ruedemann, Bull. New York State Mus., 90, 1906, p. 435, pl. 13, figs. 1-3; pl. 9, fig. 9.
Chazyan (Valcour): Valcour Island, New York; Isle La Motte, Vermont.

Orthoceras varro Billings.
Orthoceras varro Billings, Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 84.
Niagaran (Lockport): Rockwood and Grimsby, Ontario.

ORTHOCERAS VELOX Billings. See Cameroceras velox.

ORTHOCERAS VERTEBRALE Hall. See Cycloceras olorus.

ORTHOCERAS (ORMOCERAS) VERTEBRATUM Barrande. See Actinoceras vertebratum.

Orthoceras veterator Billings.
Orthoceras veterator Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 350.
Canadian (Beekmantown): Township of Oxford, Ontario.

ORTHOCERAS VIRGATUM? Hall. See Kionoceras cancellatum.

Orthoceras virgulatum Hall.
Orthoceras virgulatum Hall, Pal. New York, 2, 1852, p. 96, pl. 29, fig. 2a, b, c.
Lower Clinton: Reynale's Basin and Lockport, New York.

ORTHOCERAS (EUORTHOCERAS?) VIRGULATUM Foerste. See Orthoceras tenuisiphonatum.

Orthoceras vulgatum Billings.
Orthoceras vulgatum Billings, Geol. Surv. Canada, Rep. Progr. for 1853–56 1857, p. 337.
Trenton: Ottawa, Ontario.

Orthoceras wauwatosense Whitfield.
Orthoceras wauwatosense Whitfield, Ann. Rep. for 1879, Wisconsin Geol. Surv., 1880, p. 66; Geol. Wisconsin, 4, 1882, p. 297, pl. 19, fig. 2.
Niagaran (Racine): Near Wauwatosa, Wisconsin.

Orthoceras westoni Whiteaves.
Orthoceras westoni Whiteaves, Ottawa Nat., 12, 1898, p. 117; Geol. Surv. Canada, Pal. Foss., 3, pt. 4, 1906, p. 324.
Trenton: Mile End, Montreal, Quebec.

Observation.—Species dropped by author, who in 1906 regarded specimen as a siphuncle of Endoceras.

Orthoceras winnipegense Whiteaves.
Orthoceras Winnipegense Whiteaves, Trans. Roy. Soc. Canada, 9, sec. 4, 1892, p. 82, pl. 6, figs. 4, 4a, b; Pal. Foss. Geol. Surv. Canada, 3, pt. 3, 1897, p. 212.
Black River or Richmond: Lake Winnipeg, Manitoba.

ORTHOCERAS WOODSWORTHI McChesney. See Kionoceras cancellatum.

Orthoceras xerxes Billings.
Orthoceras Xerxes Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 316.
Canadian (Beekmantown): Phillipsburg, Quebec.

ORTHOCERAS XIPHIAS Billings. See Tripteroceras xiphias.

ORTHOCERAS (ACTINOCERAS) YOUNGI Foerste. See Actinoceras youngi.

ORTHOCERATITES Waldheim. See Orthoceras Breynius.

ORTHODESMA Hall and Whitfield. Genotype: O. rectum Hall and Whitfield.
Orthodesma Hall and Whitfield, Pal. Ohio, 2, 1875, p. 93.—Zittel, Handb. Pal., 2, 1881, p. 219.—Miller, N. A. Geol. Pal., 1889, p. 497.—Ulrich, Geol. Surv. Ohio, 7, 1893, p. 660; Geol. Minnesota, 3, pt. 2, 1894, p. 516.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 982.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 379.

ORTHODESMA (part) of authors. See Rhytimya and Cymatonota Ulrich.

Orthodesma affine Whiteaves.
Orthodesma affine Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 3, 1897, p. 184, pl. 20, fig. 5.
Black River or Richmond: Selkirk Island, Lake Winnipeg, Manitoba.

Orthodesma antiquum Whiteaves.
Orthodesma antiquum Whiteaves, Ottawa Nat., 22, 1908, p. 111, pl. 3, fig. 10.
Black River (Lowville): Hog Back near Ottawa, Ontario; Aylmer, Quebec.

Orthodesma approximatum Foerste.
Orthodesma approximatum Foerste, Bull. Sci. Lab. Denison Univ., 17, 1914, p. 285, pl. 1, fig. 5.
Cincinnatian (Pulaski): Chambly, Quebec.

ORTHODESMA ASHMANI Miller and Faber. See Rhytimya radiata.

ORTHODESMA BYRNESI Miller. See Rhytimya byrnesi.

Orthodesma canaliculatum Ulrich.

Orthodesma canaliculatum Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 520, pl. 37 figs. 7-11.—Weller, Geol. Surv. New Jersey Pal., 3, 1903, p. 171, pl. 11, fig. 5.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 1012, pl. 47, figs. 4, 4b.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 380, figs. 482d-e.

Richmond: Spring Valley, Minnesota; Ohio and Indiana.

?Trenton: Jacksonburg, New Jersey.

Cotypes.—Cat. Nos. 46271, 46272, U.S.N.M.

Orthodesma contractum (Hall).

Orthonota contracta Hall, Pal. New York, 1, 1847, p. 300, pl. 82, figs. 8a, b.—Pictet, Traite de Pal., 2d ed., 3, 1855, p. 571, pl. 80, fig. 27.—Emmons, Amer. Geol., 1, pt. 2, 1855, p. 174.—Miller, Cincinnati Quart. Jour. Sci., 1, 1874, p. 222.

Orthodesma contractum Hall and Whitfield, Geol. Surv. Ohio, Pal., 2, 1875, p. 96, pl. 2, figs. 4, 5.—Lesley, Geol. Surv. Pennsylvania, P 4, 1889, p. 563, figs.

Maysville: Cincinnati, Ohio.

Plastotype.—Cat. No. 46751, U.S.N.M.

Observation.—Possibly the same as Rhytimya mickelboroughi (Whitfield).

ORTHODESMA CUNEIFORME Miller. See Sphenolium cuneiforme.

Orthodesma curtum (Hall).

Orthonota curta Hall (not Hall, 1852), Geol. Rep. 4th Dist., New York, 1843, p. 76, fig. 1, tab. ill. 8, fig. 1.—Owen, Amer. Jour. Sci. Arts, 48, 1845, p. 306, fig. 1.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 567, fig.

Orthodesma curtum Whitfield and Hovey, Bull. Amer. Mus. Nat. Hist., 11, pt. 2, 1899, p. 160 (gen. ref.).

Clinton: Walcott, New York.

Orthodesma curvatum (Hall and Whitfield).

Orthodesma curvata Hall and Whitfield, Geol. Surv. Ohio, Pal., 2, 1875, p. 95, pl. 2, fig. 6.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 563, fig.

Richmond (Waynesville): Near Waynesville, Ohio.

ORTHODESMA CYLINDRICUM Miller and Faber. See Cymatonota cylindrica.

ORTHODESMA CYMBULA Miller and Faber. See Rhytimya mickleboroughi.

ORTHODESMA ELLIPTICUM Miller. See Psiloconcha elliptica.

ORTHODESMA FABERI Miller. See Rhytimya faberi.

ORTHODESMA GRANDE Miller. See Psiloconcha grandis.

ORTHODESMA MICKLEBOROUGHI Whitfield. See Rhytimya mickleboroughi.

ORTHODESMA MINIMUM Miller. See Psiloconcha minima.

ORTHODESMA MINNESOTENSE Miller. See Psiloconcha minnesotensis.

Orthodesma minnesotense Ulrich.

Orthodesma minnesotense Ulrich, 19th Ann. Rep. Geol. Nat. Hist. Surv. Minnesota, 1892, p. 228, fig. 14; Geol. Minnesota, 3, pt. 2, 1894, p. 517, pl. 37, figs. 12 and 14.

Black River (Decorah): St. Paul, Minnesota.

Holotype.—Cat. No. 46273, U.S.N.M.

ORTHODESMA MUNDUM Miller and Faber. See Rhytimya mundum.

Orthodesma nasutum (Conrad).
Cypricardites nasuta Conrad, 5th Ann. Rep. New York Geol. Surv., 1841, p. 52.—Emmons, Geol. Rep. New York, 1842, p. 403, fig. 4.
Modiolopsis nasutus Hall, Pal. New York, 1, 1847, p. 159, pl. 35, fig. 7; p. 296, pl. 81, fig. 2.
Orthodesma nasutum Clarke and Ruedemann, Bull. New York State Mus., 65, 1903, p. 468 (gen. ref.).—Foerste, Bull. Sci. Lab. Denison Univ., 17, 1914, p. 286, pl. 3, fig. 5; pl. 5, fig. 3.
Cincinnatian (Pulaski): Near Rome, Loraine, etc., New York.
Trenton: Carlisle, Pennsylvania.

Orthodesma occidentale Miller.
Orthodesma occidentale Miller, Jour. Cincinnati Soc. Nat. Hist., 3, 1881, p. 316, pl. 8, figs. 6, 6a.
Eden (Southgate): Cincinnati, Ohio.

ORTHODESMA PARALLELA of authors. See Cymatonota parallela.

Orthodesma parvum Ulrich.
Orthodesma parvum Ulrich, Geol. Surv. Ohio, 7, 1893, p. 660, pl. 55, figs. 19-20.
Maysville (Corryville): Cincinnati, Ohio.
Holotype.—Cat. No. 46274, U.S.N.M.

ORTHODESMA PRODUCTIFRONS Miller. See Cymatonota productifrons.

Orthodesma prolatum Foerste.
Orthodesma prolatum Foerste, Bull. Sci. Lab. Denison Univ., 17, 1914, p. 289, pl. 1, fig. 15.
Cincinnatian (Pulaski): St Lawrence River, below Becancour River, Quebec.

Orthodesma pulaskiense Foerste.
Orthodesma pulaskiensis Foerste, Bull. Sci. Lab. Denison Univ., 17, 1914, p. 288, pl. 3, fig. 6.
Cincinnatian (Pulaski): Near Pulaski, New York.

Orthodesma rectum Hall and Whitfield.
Orthodesma rectum Hall and Whitfield, Pal. Ohio, 2, 1875, p. 94, pl. 2, figs. 7, 8.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 565, figs.—Miller, N. A. Geol. Pal., 1889, p. 497, fig. 874.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 1014, pl. 47, figs. 6, 6a.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 379, fig. 484.
Richmond (Waynesville): Waynesville, etc., Ohio; Indiana.

ORTHODESMA SAFFORDI Ulrich. See Whiteavesia saffordi.

ORTHODESMA SCAPHULA Miller and Faber. See Rhytimya scaphula.

Orthodesma schucherti Ulrich.
Orthodesma schucherti, Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 518, pl. 36, figs. 25, 26.
Trenton (Prosser): Near Spring Valley, Minnesota.

ORTHODESMA SEMISTRIATUM Miller. See Cymatonota semistriata.

ORTHODESMA SINUATUM Miller. See Rhytimya sinuata.

Orthodesma subangulatum Ulrich.

Orthodesma subangulatum Ulrich, Geol. Surv. Ohio, 7, 1893, p. 660, pl. 55, figs. 21-23.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res., Indiana, 1908, p. 1015, pl. 47, figs. 7, 7a.

Richmond (Whitewater): Richmond, Indiana.

Cotypes.—Cat. No. 46275, U.S.N.M.

Orthodesma subcarinatum Ruedemann.

Orthodesma? subcarinatum Ruedemann, Bull. New York State Mus., 162, 1912, p. 96, pl. 5, figs. 5-8.

Trenton (Snake Hill): Snake Hill, Saratoga County, New York.

Orthodesma subnasutum (Meek and Worthen).

Modiolopsis subnasuta Meek and Worthen (not Hall, 1860), Proc. Philadelphia Acad. Nat. Sci., 1870, p. 41; Geol. Surv. Illinois, 6, 1875, p. 494, pl. 23, fig. 9a-b.

Orthodesma subnasutum Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 518, pl. 36, figs. 23 and 24.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 380, fig. 482b-c.

Orthodesma cf. subnasutum Foerste, Jour. Cincinnati Soc. Nat. Hist., 21, 1914, p. 135, pl. 1, fig. 11.

Modiolopsis carrollensis Worthen, Bull. Illinois State Mus. Nat. Hist., 1, 1882, p. 38.

Trenton: Carroll County and Dixon, Illinois (Galena); Rogers Gap, Kentucky(?).

Plesiotype.—Cat. No. 46276 U.S.N.M. (Ulrich).

ORTHODESMA SUBOVALE Ulrich. See Psiloconcha subovalis.

ORTHODESMA TENUISTRIATUM Miller. See Psiloconcha tenuistriata.

ORTHODONTISCUS Meek. See Cycloconcha Miller.

ORTHOGRAPTUS AMII Lapworth. See Glossograptus (Orthograptus) quadrimucronatus.

ORTHOGRAPTUS BASILICUS Lapworth. See Diplograptus basilicus.

ORTHOGRAPTUS QUADRIMUCRONATUS Ami. See Glossograptus (Orthograptus) quadrimucronatus.

ORTHONEMA NEWBERRYI Meek. See Acanthonema newberryi.

ORTHONOMÆA Hall. See Zygospira Hall.

ORTHONOTA (part) Conrad. See Cymatonota Ulrich.

ORTHONOTA Conrad. Genotype: O. undulata Conrad.

Orthonota Conrad, 5th Ann. Rep. New York Geol. Surv., 1841, p. 50.—Salter, Mem. Geol. Surv. Great Britain, 2, pt. 1, 1848, p. 359.—D'Orbigny, Prodr. Pal., 1, 1849, p. 12.—Pictet, Traite de Pal., 2d ed., 3, 1855, p. 571.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 173.—Conrad, Amer. Jour. Conch., 2, 1866, p. 103.—Hall, Prelim. Notice Lam., pt. 2, 1870, p. 85.—Miller, Cincinnati Quart. Jour. Sci., 1, 1874, p. 221.—Zittel, Handb. Pal., 2, 1881, p. 129.—Barrande, Acephales (Extraits Syst. Sil. Centre Boheme, 6), 1881, p. 198; p. 125.—Hall, Pal. New York, 5, pt. 1, Lam. 2, 1885, p. xlv.—Bigot, Bull. Soc. Geol. France, 3d ser., 1889, 17, p. 799.—Miller, N. A. Geol. Pal., 1889, p. 497.—Grabau, Bull. Buffalo Soc. Nat. Sci., 6, 1899, p. 267.—Hind, Mon. British Carb. Lam., 1, 1900, Pal. Soc., p. 363.

Orthonotus McCoy, British Pal. Rocks Foss., 1854, p. 274.—Salter, Cat. Camb. and Sil. Foss., 1873, p. 65.—Woodward, Man. Mollusca, pt. 2, 1854, p. 266.

Orthonota angulifera McCoy.
Orthonota angulifera McCoy, British Pal. Rocks, 1850, p. 276.—Billings, Pal. Foss., Geol. Surv. Canada, 2, pt. 1, 1874, p. 132, pl. 8, fig. 13, 13a.
Silurian: England; Arisaig, Nova Scotia.

ORTHONOTA CONTRACTA Hall. See Orthodesma contractum.

ORTHONOTA CURTA Hall. See Orthodesma curtum and Cuneamya alveata.

Orthonota incerta Billings.
Orthonota incerta Billings, Pal. Foss., Geol. Surv. Canada, 2, pt. 1, 1374, p. 120, pl. 8, fig. 2.
Silurian: Arisaig, Nova Scotia.

ORTHONOTA PARALLELA Hall. See Cymatonota parallela.

ORTHONOTA PHOLADIS Hall. See Cymatonota pholadis.

Orthonota simulans Billings.
Orthonota simulans Billings, Pal. Foss., Geol. Surv. Canada, 2, pt. 1, 1874, p. 131, pl. 8, fig. 4.
Silurian: Arisaig, Nova Scotia.

Orthonota speciosa Billings.
Orthonota? speciosa Billings, Pal. Foss., Geol. Surv. Canada, 2, pt. 1, 1874, p. 130, pl. 8, fig. 3.
Silurian: Arisaig, Nova Scotia.

ORTHONOTA TRIANGULATA Salter. See Grammysia triangulata.

Orthonota venusta Billings.
Orthonota venusta Billings, Pal. Foss., Geol. Surv. Canada, 2, pt. 1, 1874, p. 129, pl. 8, fig. 1.
Silurian: Arisaig, Nova Scotia.

ORTHONOTELLA Miller. Genotype: O. faberi Miller.
Orthonotella Miller, Jour. Cincinnati Soc. Nat. Hist., 5, 1882, p. 117; N. A. Geol. Pal., 1889, p. 498.

Orthonotella faberi Miller.
Orthonotella faberi Miller, Jour. Cincinnati Soc. Nat. Hist., 5, 1882, p. 117, pl. 5, figs. 7, 7a, 7b; N. A. Geol. Pal., 1889, p. 498, fig. 876.
Maysville (Fairmount): Cincinnati, Ohio.
Observation.—Probably not a pelecypod, possibly a crustacean.

ORTHONYCHIA Hall. Genotype: Platyceras subrectum Hall.
Orthonychia Hall, Nat. Hist. New York, 4, 1843, p. 172, fig. 3; p. 173; tab. ill. 36, fig. 3.—Owen, Amer. Jour. Sci. Arts, 2d ser., 1, 1846, p. 67, fig. 3.—Hall, 12th Rep. New York State Cab. Nat. Hist., p. 18; Pal. New York, 3, 1859, p. 330; 15th Rep. New York State Cab. Nat. Hist., 1861, p. 30.—Meek and Worthen, Proc. Acad. Nat. Sci. Philadelphia, 1866, p. 263; Geol. Surv. Illinois, 3, 1868, pp. 385, 387.—Hall, Pal. New York, 5, pt. 2, p. 2.—Zittel, Handb. Pal., 2, 1882, p. 217.—Koken, Neues Jahrb. f. Min., Geol. and Pal., 6, Beilage-Band, 1889, p. 466.—Whidborne, Mon. Dev. Fauna South England, , Pal. Soc., 1891, p. 222.—Keyes, Amer. Geol., 10, 1892, p. 275; Missouri Geol. Surv., 5, 1894, p. 187.—Koken, Die Leitfossilien, Leipzig, 1896, p. 133.—Pilsbry, Zittel-Eastman Textb. Pal., 1, 1900, p. 460.—Dall, ibid., 2d ed., 1913, p. 54.

Orthonychia obtusa Whiteaves.

Orthonychia obtusa Whiteaves, Geol. Surv. Canada, Ann. Rep., n. s., 14, App. F, 1904, p. 51; Pal. Foss., 3, pt. 4, 1906, p. 260, pl. 29, figs. 5, 5a.

Niagaran: Ekwan River, Canada.

ORTHORHYNCHULA Hall and Clarke. Genotype: Orthis(?) linneyi James.

Orthorhynchula Hall and Clarke, Pal. New York, 8, pt. 2, 1893, p. 181; 13th Ann. Rep. New York State Geol., 1895, p. 824.—Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 83.—Williams, Bull. U. S. Geol. Surv., 165, 1900, p. 59.—Schuchert, Zittel-Eastman Textb. Pal., 1913, p. 396.

Orthorhynchula linneyi (James).

Orthis? linneyi James, Paleontologist, 5, 1881, p. 41.—Nettelroth, Kentucky Foss. Shells, Mem. Kentucky Geol. Surv., 1889, p. 41, pl. 34, figs. 7–18.

Orthorhynchula linneyi Hall and Clarke, Pal. New York, 8, pt. 2, 1893, p. 181, pl. 56, figs. 10–13, 19.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 281, figs. 342d–e.—Bassler, Virginia Geol. Surv., Bull. 2a, 1909, pl. 14, figs. 10–12.—Foerste, Bull. Sci. Lab. Denison Univ., 14, 1910, p. 24, pl. 3, fig. 10; Bull. 17, 1912, p. 132, pl. 11, fig. 5.

Trenton: Boyle County, etc., Kentucky (Perryville-Cynthiana); Tennessee (Catheys).

Maysville: Ohio, Kentucky (Fairmount); Tennessee (Leipers); Virginia; etc.

Plesiotypes.—Cat. No. 51186, U.S.N.M.

ORTHOSTOMA Conrad. See Eccyliomphalus subgenus Orthostoma.

ORTHOSTROPHIA Hall. Genotype: Orthis strophomenoides Hall.

Orthostrophia Hall, 2d Ann. Rep. New York State Geol., 1883, pl. 36, figs. 32–34.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pp. 199, 223, 253; 11th Ann. Rep. New York State Geol., 1894, p. 267.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 256.—Schuchert, Zittel-Eastman Textb. Pal., 1913, p. 382.

Shizonema (subgenus of Hebertella) Foerste, Bull. Sci. Lab. Denison Univ., 14, 1909, p. 77.

Shizoramma (Schizonema preoccupied) Foerste, ibid., 17, 1912, p. 139. (Genotype: S. fissistriata Foerste).

Orthostrophia dixoni Foerste.

Orthostrophia dixoni Foerste, Bull. Sci. Lab. Denison Univ., 14, 1909, p. 74, pl. 4, fig. 65.

Niagaran (Brownsport): Glade southwest of Dixon Spring, Tennessee.

Orthostrophia (Schizoramma) fasciata (Hall).

Orthis fasciata Hall, Pal. New York, 2, 1852, p. 255, pl. 52, fig. 8.

Orthostrophia? fasciata Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pp. 200, 223.—Grabau, Bull. New York State Mus., 45, 1901, p. 187, fig. 96.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 256, fig. 307.

Hebertella (Schizonema) fasciata Foerste, Bull. Sci. Lab. Denison Univ., 14, 1909, p. 77, pl. 4, fig. 71.

Clinton: Rochester and Lockport, New York (Rochester); New Marion, Indiana (Osgood).

Orthostrophia (Schizoramma) fissiplica (Roemer).

Orthis fissiplica Roemer, Die silurische Fauna West. Tennessee, 1860, p. 64, pl. 5, fig. 5; Cincinnati Quart. Jour. Sci., 1, 1874, p. 252.

Dalmanella fissiplica Foerste, Jour. Geol., 11, 1903, p. 711.

Orthostrophia (Schizoramma) fissiplica—Continued.
Hebertella (Schizonema) fissiplica Foerste, Bull. Sci. Lab. Denison Univ., 14, 1909, p. 79, pl. 3, fig. 54.
Niagaran (Brownsport): Dixon Spring, Clifton, Bath Springs, Wells Creek Basin, etc., Tennessee.

Orthostrophia (Schizoramma) fissistriata (Foerste).
Hebertella (Schizonema) fissistriata Foerste, Bull. Sci. Lab. Denison Univ., 14, 1909, p. 76, pl. 3, figs. 45A, B.
Clinton (Osgood): New Marion, Indiana.

Orthostrophia newsomensis Foerste.
Orthostrophia newsomensis Foerste, Bull. Sci. Lab. Denison Univ., 14, 1909, p. 73, pl. 4, fig. 64.
Niagaran (Waldron): Newsom, Tennessee.

Orthostrophia (Schizoramma) nisis (Hall and Whitfield).
Orthis nisis Hall and Whitfield, 24th Rep. New York State Cab. Nat. Hist., 1872, p. 181; 27th Rep. ibid., 1875, pl. 9, fig. 4-8.—Nettelroth, Kentucky Fossil Shells, Mem. Kentucky Geol. Surv., 1889, p. 42, pl. 27, figs. 4, 5.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 217.
Hebertella (Schizonema) nisis Foerste, Bull. Sci. Lab. Denison Univ., 14, 1909, p. 78.
Niagaran (Louisville): Beargrass Creek, Louisville, Kentucky.
Plesiotype.—Cat. No. 51347, U.S.N.M.

ORTHOTHETES of authors. See Schuchertella Girty.

ORTHOTHETES HYDRAULICUS Grabau. See Schuchertella interstriata.

ORTHOTROPIA Hall and Clarke. Genotype: O. dolomitica Hall and Clarke.
Orthotropia Hall and Clarke, Pal. New York, 8, pt. 2, 1895, explanation sheet to pl. 84, figs. 3-7; 13th Ann. Rep. New York State Geol., 1895, p. 943.—Schuchert, Zittel-Eastman Textb. Pal., 1913, p. 395.

Orthotropia dolomitica Hall and Clarke.
Orthotropia dolomitica Hall and Clarke, Pal. New York, 8, pt. 2, 1895, pl. 84, figs. 3-7; 48th Rep. New York State Mus., 2, for 1895, 1897, p. 343, pl. 6, figs. 4-8; 14th Rep. State Geol. New York for 1894, 1897, p. 343, pl. 6, figs. 4-8.
Niagaran (Racine?): Near Milwaukee, Wisconsin.

ORTONELLA Ulrich. Genotype: Cypricardites hainesi Miller.
Cypricardites (part) Miller (not Conrad), Cincinnati Quart. Jour. Sci., 1, 1874, p. 147; N. A. Geol. Pal., 1889, p. 476.
Ortonella Ulrich, Geol. Surv. Ohio, 7, 1893, p. 669.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 983.—Grabau and Shimer, N. A. Index Fossils 1, 1909, p. 412.

Ortonella hainesi (Miller).
Cypricardites hainesi Miller, Cincinnati Quar. Jour. Sci., 1, 1874, p. 147, figs. 12, 13, p. 218; N. A. Geol. Pal., 1889, p. 476, figs. 814, 815.—Miller and Faber, Jour. Cincinnati Soc. Nat. Hist., 17, 1894, p. 29.
Ortonella hainesi Ulrich, Geol. Surv. Ohio, 7, 1893, p. 670, pl. 53, figs. 9-18.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 1017, pl. 47, figs. 9-9d.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 412, fig. 534.
Richmond (Whitewater): Richmond, Indiana.
Plesiotypes.—Cat. No. 46277, U.S.N.M.

ORTONIA Nicholson. See Cornulites Schlotheim.

ORUSIA Walcott. See Eoorthis subgenus Orusia.

ORYGOCERAS Ruedemann. Genotype: Orthoceras cornuoryx Whitfield.
Orygoceras Ruedemann, Bull. New York State Mus., 90, 1906, p. 449.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 62.

Orygoceras cornuoryx (Whitfield).
Orthoceras cornu-oryx Whitfield, Bull. Amer. Mus. Nat. Hist., 1, 1886, p. 320, pl. 27, figs. 1, 2, 6.—Seely, Vermont State Geol. Rep., 7, 1910, pl. 56, fig. 3.
Orygoceras cornu-oryx Ruedemann, Bull. New York State Mus., 90, 1906, p. 450, pl. 14, figs. 5-8, figs. 19-20.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 63, fig. 1268.
Canadian (Beekmantown): Fort Cassin, Vermont; Valcour, New York.

OTTAWACRINUS W. R. Billings. Genotype: O. typus W. R. Billings.
Ottawacrinus W. R. Billings, Ottawa Nat., 1, 1887, p. 49.—Miller, N. A. Geol. Pal., 1889, p. 265.—Bather, Ann. Mag. Nat. Hist., 6th ser., 5, 1890, p. 332, pl. 14, fig. 12.—Wachsmuth and Springer, Proc. Acad. Nat. Sci. Philadelphia, 1890, pp. 378, 380.—Bather, Treatise on Zool., pt. 3, Echinoderma, London, 1900, p. 178, fig. 96.—Springer, Mem. Geol. Surv. Canada, 15 P, 1911, p. 39.—Bather, Bull. Victoria Mem. Mus., 1, 1913, pp. 1-10—Springer, Zittel-Eastman Textb. Pal., 2d ed., 1913, p. 215.

Ottawacrinus billingsi Springer.
Ottawacrinus billingsi Springer, Mem. Geol. Surv. Canada, 15P, 1911, p. 40, pl. 4, figs. 1-3.
Trenton (Curdsville): Kirkfield, Ontario.

Ottawacrinus typus W. R. Billings.
Ottawacrinus typus W. R. Billings, Ottawa Nat., 1, 1887, p. 49.—Miller, N. A. Geol. Pal., 1889, p. 265, fig. 378.—Springer, Mem. Geol. Surv. Canada, 15P, 1911, p. 37, pl. 4, figs. 5-7.—Bather, Bull. Victoria Mem. Bull. 1, 1913, p. 2, pl. 1.
Trenton (Curdsville): Hull, Quebec; Kirkfield, Ontario.

OXOPLECIA Wilson. See Triplecia subgenus Cliftonia Foerste.

OXYDISCUS Koken. Genotype: Oxydiscus imitator Koken.
Bellerophon, Cyrtolites, Porcellia, and Euomphalus (part) of authors.
Oxydiscus Koken, Neues Jahrb. Min., Geol. Pal., Beilageband, 6, 1889, p. 390; ibid., 1898, p. 8; Die Leitfossilien, Leipzig, 1896, p. 100.—Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, pp. 852-912.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, p. 951.—Grabau and Shimer, N. A. Index Fossils, 1, p. 616.

Oxydiscus acutus (?Sowerby) Billings.
Bellerophon acutus Sowerby, Murchison's Sil. Syst., 1839, p. 643.—Billings, Cat. Sil. Fossils Anticosti, Geol. Surv. Canada, 1866, p. 18, 56.
Oxydiscus acutus Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 852 (gen. ref.).
Gamachian (Ellis Bay): Gamache Bay, Anticosti.

Oxydiscus argo (Billings).
Bellerophon Argo Billings, Canadian Nat. Geol., 5, 1860, p. 167, figs. 12, 13; Geol. Canada, Geol. Surv. Canada, 1863, p. 146, fig. 99a, b.

Oxydiscus argo—Continued.
Oxydiscus argo Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 913.
Black River: Pauquettes Rapids, Ottawa River (Leray), and Lake St. John, Canada.

Oxydiscus catilloides (Raymond).
Bucania catilloides Raymond, Ann. Cranegie Mus., 3, 1906, p. 576.
Oxydiscus catilloides Raymond, ibid., 4, 1908, p. 197, pl. 55, figs. 9, 10.
Chazyan (Crown Point): Valcour Island, New York.

Oxydiscus cristatus (Safford).
Cyrtolites cristatus Safford, Geol. Tennessee, 1869, p. 289.
Oxydiscus cristatus Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 914, pl. 82, figs. 26-28.—Hayes and Ulrich, U. S. Geol. Surv., folio 95, illust. sheet, 1903, fig. 27.
Trenton (Catheys): Nashville, etc., Tennessee.
Cotypes.—Cat. Nos. 45949-45951, U.S.N.M.

Oxydiscus disculus (Billings).
Bellerophon disculus Billings, Canadian Nat. and Geol., 5, 1860, p. 168, fig. 11; Geol. Canada, Geol. Surv. Canada, 1863, p. 146, fig. 98.
Oxydiscus disculus Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 852 (gen. ref.).
Black River: Blue Point, Lake St. John, Canada.

Oxydiscus macer (Billings).
Bellerophon macer Billings, Pal. Foss., 1, Geol. Surv., Canada, 1865, p. 347, text fig. 335.
Oxydiscus macer Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 913 (gen. ref.).
Canadian (Beekmantown): Leeds and Grenville Counties, Canada.

Oxydiscus magnus (Miller).
Cyrtolites magnus Miller, Jour. Cincinnati Soc. Nat. Hist., 1, 1878, p. 103, pl. 3, fig. 10.
Oxydiscus magnus Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 859 (gen. ref.).—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 970, pl. 41, fig. 5.
Richmond: Near Richmond, Indiana.

Oxydiscus palinurus (Billings).
Bellerophon Palinurus Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 311, fig. 302.—Miller, N. A. Geol. Pal., 1889, p. 397, fig. 654.
Oxydiscus palinurus Ulrich and Scofield, Geol. Minnesota, 1897, p. 913 (gen. ref.).
Canadian (Beekmantown): Stanbridge, Quebec.

OXYDISCUS STRONGI Koken. See Sinuopea strongi.

Oxydiscus subacutus Ulrich.
Oxydiscus subacutus Ulrich, Geol. Minnesota, 3, pt. 2, 1897, p. 913, pl. 62, figs. 62-65; pl. 82, figs. 23-25.—Weller, Geol. Surv. New Jersey, Pal. 3, 1903, p. 179, pl. 12, figs. 8, 9.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 616, fig. 826.
Cyrtolites subacutus Miller, N. A. Geol. Pal., 2d App., 1897, p. 766 (gen. ref.).
Trenton: Near Danville, Kentucky (Flanagan); Minnesota (Prosser); near Springdale, New Jersey.
Cotypes.—Cat. No. 45952, U.S.N.M.

PACHYDICTYA Ulrich. Genotype: P. robusta Ulrich.

Pachydictya Ulrich, Jour. Cincinnati Soc. Nat. Hist., 5, 1882, p. 152.—Foerste, Bull. Sci. Lab. Denison Univ., 2, 1887, p. 162.—Miller, N. A. Geol. Pal., 1889, p. 313.—Ulrich, Geol. Surv. Illinois, 8, 1890, pp. 390, 522; Geol. Minnesota, 3, 1893, p. 145.—Pocta, Syst. Sil. Centre Boheme, 8, pt. 1, 1894, p. 15.—Simpson, 14th Ann. Rep. State Geol. New York for 1894, 1897, p. 530.—Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 48.—Hennig, Archiv. fur Zool., K. Sven. Vet.-Akad. Stockholm, 2, No. 10, 1905, p. 25.—Bassler, Bull. U. S. Geol. Surv., 292, 1906, p. 57.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 159.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 751.—Bassler, Bull. U. S. Nat. Mus., 77, 1911, pp. 137, 138.

Pachydictya acuta (Hall).

Stictopora? acuta Hall, Pal. New York, 1, 1847, p. 74, pl. 26, figs. 3a–b.—Billings, Canadian Nat. Geol., 1, 1856, p. 317.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1063, figs.—Ulrich, Jour. Cincinnati Soc. Nat. Hist., 5, 1882, p. 168, pl. 8, figs. 1–1b.

Ptilodictya acuta Nicholson, Pal. Province Ontario, 1875, p. 12, fig. 3.—Billings, Canadian Nat. Geol., 1, 1856, p. 318, fig. 5; Geol. Canada, Geol. Surv. Canada, 1863, p. 158, fig. 121.—Emmons, Amer. Geology, 1, pt. 2, 1855, pl. 7, figs. 3a–c;

Pachydictya acuta Ulrich, 14th Ann. Rep. Geol. Minnesota, 1886, pp. 75, 76; Contr. Micro-Pal. Cambro-Sil., pt. 2, 1889, p. 44, Geol. Minnesota, 3, 1893, p. 155, pl. 8, figs. 11–17; pl. 9, fig. 7.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 159.—Whiteaves, Pal. Foss., 3, 1897, p. 161.

Trenton: Trenton Falls, etc., New York; Ontario; Kentucky; Iowa; Minnesota. Manitoba; etc.

Plesiotypes.—Cat. Nos. 43721, 44099, U.S.N.M. (Ulrich).

PACHYDICTYA ALCYONE Billings. See Pachydictya crassa.

PACHYDICTYA ARGUTA Ulrich. See Pachydictya crassa.

Pachydictya bifurcata (Hall).

Eschara bifurcata Van Cleve (MS.).

Stictopora bifurcata Hall, 12th Ann. Rep. Indiana Geol. Nat. Hist., 1883, p. 267, pl. 13, figs. 3, 4.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1063, fig.

Pachydictya bifurcata Foerste, Bull. Sci. Lab. Denison Univ., 2, 1887, p. 163; ibid., 3, 1888, pl. 15, fig. 9; Geol. Surv. Ohio, 7, 1895, p. 599, pl. 28, fig. 9.—Bassler, Bull. U. S. Nat. Mus., 77, 1911, pp. 143–145, figs. 67, 68.

Stictopora scalpellum Eichwald (not Lonsdale), Lethæa Rossica, 1, 1860, p. 390, pl. 24, fig. 15a–c.

Rhinidictya? Borkholmiensis Wiman, Bull. Geol. Inst. Univ. Upsala, 5, pt. 2, 1901, p. 180, pl. 6, figs. 1–7.

Silurian: Dayton, Fairhaven, etc., Ohio; Kentucky (Brassfield); various localities in Esthonia, Russia (Lyckholm and Borkholm).

Plesiotypes.—Cat. No. 57240, U.S.N.M. (Bassler).

Pachydictya bifurcata instabilis Foerste.

Pachydictya bifurcata var. instabilis Foerste, Bull. Sci. Lab. Denison Univ., 2, 1887, p. 164; ibid., 3, 1888, pl. 15, fig. 10; Geol. Surv. Ohio, 7, 1895, p. 599, pl. 28, fig. 10.

Upper Medinan (Brassfield): Near New Carlisle, Ohio.

PACHYDICTYA CONCILATRIX Ulrich. See Trigonodictya conciliatrix.

Pachydictya crassa Hall.

Stictopora crassa Hall, Pal. New York, 2, 1852, p. 45, pl. 18, figs. 4a–c.

Ptilodictya crassa Nicholson and Hinde, Canadian Jour., n. s., 14, 1874, p. 142; Pal. Prov. Ontario, 1875, p. 45.

Pachydictya crassa Ulrich, Geol. Minnesota, 3, 1893, p. 147.—Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 338.—Bassler, ibid., 292, 1906, p. 57, pl. 18, figs. 11, 12; pl. 21, figs. 14–16.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 160.

Ptilodictya rustica Billings, Cat. Sil. Foss. Anticosti, 1866, p. 36.

Pachydictya rustica Ulrich, Geol. Minnesota, 3, 1893, p. 146 (gen. ref.).

Ptilodictya arguta Billings, Cat. Sil. Foss. Anticosti, 1866, p. 36.

Pachydictya arguta Ulrich, Geol Minnesota, 3, 1893, p. 146 (gen. ref.).

Stictopora scitula Hall and Simpson, Pal. New York, 6, 1887, pl. 61, figs. 24, 25.

Pachydictya scitula Ulrich, Geol. Minnesota, 3, 1893, p. 147 (gen. ref.).

Ptilodictya farctus Foerste, Proc. Boston Soc. Nat. Hist., 24, 1889, p. 328, pl. 6, fig. 31.

Pachydictya farctus Foerste, Geol. Surv. Ohio, 7, 1895, p. 599, pl. 31, fig. 31.

Ptilodictya alcyone Billings, Cat. Sil. Foss. Anticosti, 1866, p. 36.

Pachydictya alcyone Ulrich, Geol. Minnesota, 3, 1893, p. 146 (gen. ref.).

Ptilodictya tenera Billings, Cat. Sil. Foss. Anticosti, 1866, p. 33.

Ptilodictya rudis Foerste, Proc. Boston Soc. Nat. Hist., 24, 1889, p. 329, pl. 6, fig. 33.

Pachydictya (Rhinidictya) rudis Foerste, Geol. Surv. Ohio, 7, 1895, p. 599, pl. 31, figs. 32, 33.

Early and Middle Silurian: An abundant and widespread species in New York, Canada, Ohio, Kentucky, Tennessee, etc.

Plesiotype.—Cat. No. 35754, U.S.N.M.

Pachydictya elegans Ulrich.

Pachydictya elegans Ulrich, Geol. Minnesota, 3, 1893, p. 154, pl. 8, figs. 18, 19; pl. 9, figs. 8, 9.—Bassler, Bull. U. S. Nat. Mus., 77, 1911, pp. 138, 139, figs. 61, 62.

Trenton (Prosser): St. Paul, etc., Minnesota; Decorah, Iowa.

Middle Ordovician (Wesenberg): Wesenberg, Esthonia, Russia.

Cotypes and *plesiotypes.*—Cat. Nos. 43583, 57234, U.S.N.M.

Pachydictya emaciata Foerste.

Pachydictya emaciata Foerste, Bull. Sci. Lab. Denison Univ., 2, 1887, p. 62; ibid, 3, 1888, pl. 15, fig. 8; Geol. Surv. Ohio, 7, 1895, p. 599, pl. 28, fig. 8.

Upper Medinan (Brassfield): Dayton, Ohio.

PACHYDICTYA EMARCESCENS Foerste. See Ptilodictya expansa emarcescens.

Pachydictya everetti Ulrich.

Pachydictya everetti Ulrich, Geol. Surv. Illinois, 8, 1890, p. 523, pl. 33, figs. 1–1f.

Black River (Platteville): Dixon, Illinois.

Holotype.—Cat. No. 43429, U.S.N.M.

Pachydictya? famelica (Foerste).

Ptilodictya famelicus Foerste, Proc. Boston Soc. Nat. Hist., 24, 1889, p. 329, pl. 6, fig. 32.

Upper Medinan (Brassfield): Eaton and Belfast, Ohio.

PACHYDICTYA FARCTUS Foerste. See Pachydictya crassa.

Pachydictya fenestelliformis (Nicholson).

Ptilodictya fenestelliformis Nicholson, Ann. Mag. Nat. Hist., 4th ser., 15, 1875, p. 181, pl. 14, figs. 5–5b; Pal. Ohio, 2, 1875, p. 263, pl. 25, figs. 8–8b; Pal. Prov. Ontario, 1875, p. 14.—Lesley, Geol. Surv. Pennsylvania, Report P 4, 1889, p. 827, figs.

Phænopora? fenestelliformis Ulrich, Jour. Cincinnati Soc. Nat. Hist., 5, 1882, pl. 8, fig. 8.

Pachydictya fenestelliformis Ulrich, Geol. Surv. Illinois, 8, 1890, p. 256.

Richmond: Blanchester and other localities in Ohio; Wilmington, Illinois; ?Peterborough, Canada (Nicholson).

Pachydictya fenestelliformis corticula Ulrich.

Pachydictya fenestelliformis var. corticula Ulrich, Geol. Surv. Illinois, 8, 1890, p. 526, pl. 31, fig. 1.

Richmond (Fernvale): Wilmington, Illinois.

Pachydictya fimbriata Ulrich.

Pachydictya fimbriata Ulrich, 14th Ann. Rep. Geol. Nat. Hist. Surv. Minnesota, 1886, p. 75; Geol. Minnesota, 3, 1893, p. 152, pl. 8, figs. 28–34; pl. 9, figs. 13, 14.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 159, fig. 214.

Black River (Decorah): Minneapolis and St. Paul, Minnesota.

Cotypes.—Cat. No. 43581, U.S.N.M.

Pachydictya? firma Ulrich.

Pachydictya firma Ulrich, Geol. Surv. Illinois, 8, 1890, p. 525, pl. 31, figs. 2–2f.

Richmond: Wilmington, Illinois (Fernvale); Island of Anticosti (Charleton).

Figured sections of *cotype.*—Cat. No. 43783, U.S.N.M.

Pachydictya foliata Ulrich.

Pachydictya foliata Ulrich, 14th Ann. Rep. Geol. Nat. Hist. Surv. Minnesota, 1886, p. 73; Geol. Minnesota, 3, 1893, p. 149, pl. 9, figs. 1–5; pl. 10, figs. 5–10; Zittel's Textb. Pal. (Engl. ed.), 1896, fig. 470 (p. 283).—Sardeson, Jour. Geol., 9, 1901, p. 151, pl. B, figs. 1–3.—Bassler, Zittel-Eastman Textb. Pal., 1913, p. 346, fig. 506.

Black River (Decorah): Minneapolis, St. Paul, Cannon Falls, etc., Minnesota.

Cotypes.—Cat. No. 43584, U.S.N.M.

Pachydictya gigantea Ulrich.

Pachydictya gigantea Ulrich, Geol. Surv. Illinois, 8, 1890, p. 524, pl. 31, figs. 3–3e.

Richmond (Fernvale): Wilmington, Illinois.

Figured sections of *cotype.*—Cat. No. 43784, U.S.N.M.

Pachydictya hexagonalis Ulrich.

Pachydictya hexagonalis Ulrich, Contr. Micro-Pal. Cambro-Sil., pt. 2, 1889, p. 42, pl. 9, figs. 2–2c.—Whiteaves, Pal. Foss., 3, 1895, p. 118.

Richmond: Stony Mountain, Manitoba (Stony Mountain); Island of Anticosti (Charleton).

Fragment of *holotype.*—Cat. No. 43473, U.S.N.M.

Pachydictya magnipora Ulrich.

Pachydictya magnipora Ulrich, Contr. Micro-Pal. Cambro-Sil., pt. 2, 1889, p. 43.—Whiteaves, Geol. Surv. Canada, Pal. Foss., 3, 1897, p. 161.

Trenton: St. Andrews, Manitoba; Kenyon, Minnesota (Prosser).

Pachydictya obesa Foerste.

Pachydictya obesa Foerste, Bull. Sci. Lab. Denison Univ., 2, 1887, p. 165; ibid., 3, 1888, pl. 15, fig. 12; Geol. Surv. Ohio, 7, 1895, p. 599, pl. 28, fig. 12.

Upper Medinan (Brassfield): Dayton, Ohio.

Pachydictya occidentalis Ulrich.

Pachydictya occidentalis Ulrich, 14th Ann. Rep. Geol. Nat. Hist. Surv. Minnesota, 1886, p. 75; Geol. Minnesota, 3, 1893, p. 151, pl. 8, figs. 20–27; pl. 9, figs. 6–10.

Black River (Decorah): St. Paul and Goodhue County, Minnesota.

Cotypes.—Cat. No. 43582, U.S.N.M.

Pachydictyá pumila Ulrich.

Pachydictya pumila Ulrich, Jour. Cincinnati Soc. Nat. Hist., 12, 1890, p. 186, fig. 11; Geol. Minnesota, 3, 1893, p. 157, pl. 10, figs. 1–4; pl. 8, figs. 4, 5.

Rhinidictya humilis Ulrich, Jour. Cincinnati Soc. Nat. Hist., 12, 1890, p. 185, fig. 10.

Trenton: Cannon Falls, Minnesota (Prosser); Trenton Falls, New York.

Cotypes.—Cat. No. 43702, U.S.N.M.

Pachydictya pumila sublata Ulrich.

Pachydictya pumila var. sublata Ulrich, Geol. Minnesota, 3, 1893, p. 158.

Trenton (Prosser): Cannon Falls, Minnesota.

Cotypes.—Cat. No. 43585, U.S.N.M.

Pachydictya robusta Ulrich.

Pachydictya robusta Ulrich, Jour. Cincinnati Soc. Nat. Hist., 5, 1882, p. 173, pl. 8, figs. 10a–c.

Chazyan (Ottosee): Knoxville, Tennessee.

Cotypes.—Cat. No. 43701, U.S.N.M.

PACHYDICTYA (RHINIDICTYA) RUDIS Foerste. See Pachydictya crassa.

PACHYDICTYA RUSTICA Ulrich. See Pachydictya crassa.

PACHYDICTYA SCITULA Ulrich. See Pachydictya crassa.

Pachydictya? splendens Ulrich.

Pachydictya splendens Ulrich, Geol. Surv. Illinois, 8, 1890, p. 523, pl. 31, fig. 2g; pl. 32, figs. 1–1b.

Richmond (Fernvale): Wilmington, Illinois.

Figured section of *cotype.*—Cat. No. 43785, U.S.N.M.

Pachydictya triserialis Ulrich.

Pachydictya triserialis Ulrich, Jour. Cincinnati Soc. Nat. Hist., 12, 1890, p. 187, fig. 12; Geol. Minnesota, 3, 1893, p. 159, pl. 10, figs. 11–14.

Trenton: Montreal, Quebec.

Cotypes.—Cat. No. 43703, U.S.N.M.

Pachydictya turgida Foerste.

Pachydictya turgida Foerste, Bull. Sci. Lab. Denison Univ., 2, 1887, p. 164; ibid., 3, 1888, pl. 15, fig. 11; Geol. Surv. Ohio, 7, 1895, p. 599, pl. 28, fig. 11.

Upper Medinan (Brassfield): Dayton and Fair Haven, Ohio.

PACHYDOMELLA Ulrich. Genotype: P. tumida Ulrich.

Pachydomella Ulrich, Jour. Cincinnati Soc. Nat. Hist., 13, 1891, pp. 197, 198.—Miller, N. A. Geol. Pal., 1st App., 1892, p. 710.

Pachydomella longula Ulrich and Bassler.

Pachydomella longula Ulrich and Bassler, Maryland Geol. Surv., Low. Dev., 1913, p. 542, pl. 98, figs. 29–31.

Helderbergian (Keyser): Cumberland, Maryland.

Holotype.—Cat. No. 53289, U.S.N.M.

PACHYOCRINUS Billings. Genotype: P. crassibasalis Billings.

Pachyocrinus Billings, Geol. Surv. Canada, dec. 4, 1859, p. 22.—Wachsmuth and Springer, Proc. Acad. Nat. Sci. Philadelphia, 1879, p. 319 (Rev. Pal., pt. 1, p. 145).—Miller, N. A. Geol. Pal., 1889, p. 265.—Bather, Treatise on Zool., pt. 3, Echinoderma, London, 1900, p. 203.

Pachyocrinus crassibasalis Billings.

Pachyocrinus crassibasalis Billings, Geol. Surv. Canada, dec. 4, 1859, p. 22, pl. 1, figs. 3a, b.—Hudson, Bull. New York State Mus., 107, 1907, p. 120, fig. 4, pl.

Chazyan (Aylmer): Caughnawaga, and Islands of Montreal, Jesus, and Bizard, Canada.

PACHYPORA (PLATYAXUM) Foerste. See Platyaxum.

PACHYSTROMA Nicholson and Murie. See Stromatopora Goldfuss.

PAGODIA Walcott. Genotype: P. lotos Walcott.

Pagodia Walcott, Proc. U. S. Nat. Mus., 29, 1905, p. 63; Cambrian Faunas of China, 3, Carnegie Inst., 1913, p. 160.

Pagodia seelyi Walcott.

Pagodia seelyi Walcott, Smiths. Misc. Coll., 57, 1912, p. 269, pl. 44, figs. 12-14a.

Ozarkian or Upper Cambrian (Potsdam): Near Port Henry, Essex County, New York.

Cotypes.—Cat. Nos. 58582–58584, U.S.N.M.

PALÆACMÆA Hall and Whitfield. Genotype: P. typica Hall and Whitfield.

Palæacmæa Hall and Whitfield, 23d Rep. New York Mus. Nat. Hist., 1873, p. 242 (extract, 1872, p. 21).—Lindstrom, Kongl. Sven. Vet. Akad. Handl., 19, No. 6, 1881, p. 58.—Barrois, Mem. Soc. Geol. du Nord., 3, Lille, 1889, p. 184; Mem. Soc. Agriculture et Arts de Lille, 4th ser., 17, p. 184.—Miller, N. A. Geol. Pal., 1889, p. 414.—Barrois, Ann. Soc. Geol. du Nord, 19, Lille, 1891, p. 213.—Koken, Die Leitfossilien, Leipzig, 1896, p. 96.—Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, pp. 826–836.—Berkey, Amer. Geol., 11, p. 278.—Koken, Bull. de l'Acad. Imp. Sci. St. Petersburg, 7, 1897, p. 113.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 606.

Palæacmæa humilis Ulrich and Scofield.

Palæacmæa humilis Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 837, pl. 61, figs. 45–48.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 607, fig. 809a–b.

Black River: Minneapolis (Platteville) and Goodhue County (Decorah), Minnesota.

Palæacmæa irregularis Raymond.

Palæacmæa irregularis Raymond, Amer. Jour. Sci., 4th ser., 20, 1905, p. 376; Ann. Carnegie Mus., 4, 1908, p. 174, pl. 54, figs. 10–12.

Chazyan (Day Point): Chazy, New York.

Palæacmæa orphyne (Billings).

Metoptoma Orphyne Billings, Pal. Fossils, 1, Geol. Surv. Canada, 1865, p. 88 (adv. sheets, 1862).

Palæacmæa orphyne Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 836 (gen. ref.).

Ozarkian? (Levis—erratics): Point Levis, Quebec.

Palæacmæa quebecensis (Billings).

Metoptoma Quebecensis Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 308, fig. 300.

Palæacmæa quebecensis—Continued.

Palæacmæa Quebecensis Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 1, 1884, p. 31 (gen. ref.).—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 607, fig. 808.

Canadian (Levis—Limestone): Point Levis, Quebec.

Palæacmæa typica Hall and Whitfield.

Palæacmæa typica Hall and Whitfield, 23d Rep. New York State Cab. Nat. Hist., 1873, pl. 11, figs. 4, 5.—Walcott, Smiths. Misc. Coll., 57, 1912, p. 264, pl. 43, figs. 1 and 2.

Upper Cambrian or Ozarkian (Hoyt): Essex and Washington Counties, New York.

PALÆARCA Hall. See Cyrtodonta Billings.

PALÆARCA? AMYGDALINA Hall. See Ambonychia amygdalina.

PALÆARCA LATA Hall. See Modiolopsis latus.

PALÆARCA PRIMIGENIUS Hall. See Modiolopsis primigenia.

PALÆARCA SUBSPATULATA Hall. See Prolobella subspatulata.

PALÆARCA VENTRICOSA Hall. See Cyrtodonta huronensis.

PALÆASPIS Claypole. Genotype: P. americana Claypole.

Palæaspis Claypole, Amer. Nat., 18, 1884, p. 1224; Proc. Amer. Assoc. Adv. Sci., 33d meeting, Philadelphia, 1884, p. 426; Rep. British Assoc. Adv. Sci., 54th meeting, Montreal, 1884, pp. 733–734; Quart. Jour. Geol. Soc. London, 61, 1885, pp. 50, 62; ibid., 48, 1892, pp. 542.—Miller, N. A. Geol. Pal., 1889, p. 604.—Woodward, Cat. Foss. Fishes in British Mus., pt. 3, 1891, p. 169.—Lesley, Rep. Geol. Surv. Pennsylvania, 2, 1892, p. 775.—Collinge, Proc. Birmingham Philos. Soc., 9, pt. 1, p. 3.—Traquair, Geol. Magazine, 4th ser., 7, 1900, p. 467.

Palæaspis americana Claypole.

Palæaspis americana Claypole, Geol. Surv. Pennsylvania, Pref. to Rep. F 2, 1885, p. 12; Quart. Jour. Geol. Soc. London, 1885, 41, p. 62.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 575, fig.—Claypole, Quart. Jour. Geol. Soc. London, 1892, 48, p. 561, fig. 8.

Palæaspis bitruncata Claypole, Geol. Surv. Pennsylvania, Pref. to Rep. F 2, 1885, p. 12; Quart. Jour. Geol. Soc. London, 1885, 41, p. 65.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 575, fig.

Palæaspis elliptica Claypole, Proc. Amer. Assoc. Adv. Sci., 1885, 33d meeting, Philadelphia, p. 462.

Cayugan (New Bloomfield): Perry County, Pennsylvania.

PALÆASPIS BITRUNCATA Claypole. See Palæaspis americana.

PALÆASPIS ELLIPTICA Claypole. See Palæaspis americana.

PALÆASTER (part) of authors. See Mesopolaeaster Schuchert, Hudsonaster Stürtz, Promopalæaster Schuchert, and Petraster Billings.

PALÆASTER Hall. Genotype: P. niagarensis Hall.

Palæaster Hall, Pal. New York, 2, 1852, p. 247; 20th Rep. New York State Cab. Hist., 1868, p. 282; rev. ed., 1868 (1870), p. 324.—Zittel, Handb. Pal., 1, 1879, p. 452.—Nicholson and Etheridge, Mon. Sil. Foss. Girvan Dist., 1880, p. 318.—Schuchert, Bull. U. S. Nat. Mus. 88, 1915, p. 67.

PALÆASTER—Continued.

Palæaster (part) Salter, Ann. Mag. Nat. Hist., 2d ser., 20, 1857, p. 323; Rep. 26th Meeting British Assoc. Adv. Sci., 1857, p. 76.—Pictet, Traite de Pal., 2d ed., 4, 1857, p. 265.—Salter, Canadian Jour., n. s., 3, 1858, p. 158.—Stürtz, Palæontographica, 32, 1886, p. 91.—Miller, N. A. Geol. Pal., 1889, p. 265.—Stürtz, Verh. naturh. Ver. preuss. Rheinl., etc., 1893, pp. 41, 58.—James, Jour. Cincinnati Soc. Nat. Hist., 18, 1895, pp. 126, 127.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 714.

PALÆASTER ANTIQUA Troost. See Mesopalæaster antiquus.

PALÆASTER ANTIQUATA Hall. See Promopalæaster speciosus.

PALÆASTER CLARKANA Miller. See Hudsonaster incomptus.

PALÆASTER CLARKII Miller. See Hudsonaster incomptus.

PALÆASTER DUBIUS Miller and Dyer. See Mesopalæaster(?) dubius.

PALÆASTER DYERI Meek. See Promopalæaster dyeri.

PALÆASTER EXCULPTUS Miller. See Promopalæaster exculptus.

PALÆASTER FINEI Ulrich. See Mesopalæaster finei.

PALÆASTER GRANTII Spencer. See Mesopalæaster granti.

PALÆASTER GRANULOSUS Hall. See Promopalæaster granulosus.

PALÆASTER GRANULOSUS Meek. See Promopalæaster speciosus.

PALÆASTER HARRISI Miller. See Urasterella grandis.

PALÆASTER INCOMPTUS Meek. See Hudsonaster incomptus.

PALÆASTER JAMESI Dana. See Petraster americana.

PALÆASTER LONGIBRACHIATUS Miller. See Promopalæaster spinulosus.

PALÆASTER MAGNIFICUS Miller. See Promopalæaster magnificus.

PALÆASTER MATUTINA Hall. See Hudsonaster matutina.

PALÆASTER MIAMIENSIS Miller. See Anorthaster miamiensis.

Palæaster niagarensis Hall.

Palæaster niagarensis Hall, Pal. New York, 2, 1852, p. 247, pl. 51, figs. 21–23.—Pictet, Traite de Pal., 2d ed., 4, 1857, p. 265, pl. 98, fig. 2.—Billings, Geol. Surv. Canada, dec. 3, 1858, p. 78, fig.—Hall, 20th Rep. New York State Cab. Nat. Hist., 1868, p. 282; rev. ed., p. 324.—Quenstedt, Petrefactenkunde Deutschlands, 1, 4, 1876, p. 73, pl. 92, figs. 32, 33.—Hudson, Bull. New York State Mus. 164, 1913, p. 130, pls. 9, 10, 12, 13.—Schuchert, Bull. U. S. Nat. Mus. 88, 1915, p. 69, pl. 7, figs. 1–4.

Clinton (Rochester): Lockport, New York; Grimsby, Ontario.

PALÆASTER PARVIUSCULUS Billings. See Mesopalæaster parviusculus.

PALÆASTER PULCHELLUS Billings. See Urasterella pulchella.

PALÆASTER SHÆFFERI Hall. See Mesopalæaster shæfferi.

PALÆASTER SIMPLEX Miller and Dyer. See Hudsonaster incomptus.

PALÆASTER SPECIOSA Meek. See Promopalæaster speciosus.

PALÆASTER SPINULOSUS Miller and Dyer. See Promopalæaster spinulosus.

PALÆASTER WILBERANUS Hall. See Mesopalæaster(?) wilberanus.

PALÆASTER? WILSONI Raymond. See Promopalæaster wilsoni.

PALÆASTERINA ANTIQUATA Shumard. See Promopalæaster speciosus.

PALÆASTERINA APPROXIMATA Miller and Dyer. See Petraster speciosus.

PALÆASTERINA JAMESI Dana. See Petraster americanus.

PALÆASTERINA RIGIDUS Billings. See Petraster rigidus.

PALÆASTERINA RUGOSUS Billings. See Hudsonaster rugosus.

PALÆASTERINA SPECIOSA Miller and Dyer. See Petraster speciosus.

PALÆASTERINA WYKOFFI Miller and Gurley. See Promopalæaster wykoffi.

PALÆOBOLUS Matthew. See Obolus subgenus Palæobolus.

PALÆOCARDIA Hall. Genotype: P. cordiformis Hall.
Palæocardia Hall, 20th Rep. New York State Cab. Hist., 1868, p. 341 (Extras, 1865); rev. ed., 1870, p. 389.—Miller, N. A. Geol. Pal., 1889, p. 498.

Palæocardia cordiformis Hall.
Palæocardia cordiformis Hall, 20th Rep. New York State Cab. Hist., 1868, p. 341 (Extras, 1865); rev. ed., 1870, p. 389, pl. 14, figs. 11, 12.
Niagaran (Racine): Wauwatosa, Wisconsin.

PALÆOCHONIA CYATHIFORMIS Fromental. See Ischadites cyathiformis.

PALÆOCLYMENIA Foord. See Trocholites Conrad.

PALÆOCOMA CYLINDRICA Billings. See Tæniaster cylindricus.

PALÆOCOMA SPINOSA Billings. See Tæniaster spinosus.

PALÆOCONCHA Miller. See Ctenodonta Salter.

PALÆOCONCHA FABERI Miller and Faber. See Ctenodonta obliqua.

PALÆOCRINUS Billings. Genotype: P. striatus Billings.
Palæocrinus Billings, Geol. Surv. Canada, dec. 4, 1859, p. 24.—Meek, Geol. Surv. Ohio, Pal., 1, 1873, p. 29, footnote.—Zittel, Handb. Pal., 1, 1879, p. 352.—Miller, N. A. Geol. Pal., 1889, p. 267.—Bather, Treatise on Zool., pt. 3, Echinoderma, London, 1900, p. 172, fig. 85.—Zittel, Grundzuge Pal., 1, 1910, p. 152.—Springer, Zittel-Eastman Textb. Pal., 2d ed., 1913, p. 217.

Palæocrinus angulatus (Billings).
Dendrocrinus angulatus Billings, Geol. Surv. Canada, 1857, p. 269.
Cyathocrinus angulatus Wachsmuth and Springer, Proc. Acad. Nat. Sci. Philadelphia, 1879, p. 308 (Rev. Pal., pt. 1, p. 85).
Palæocrinus angulatus Billings, Canadian Oreg. Rem. (Geol. Surv. Canada), dec. 4, p. 45, pl. 3, fig. 6a, b.—Springer, Mem. Geol. Surv. Canada, 15P, 1911, p. 41 (loc. occ.).
Trenton (Curdsville): Ottawa and Kirkfield, Ontario.

Palæocrinus chapmani (Billings).
Palæocystites chapmani Billings, Geol. Surv. Canada, dec. 3, 1858, pp. 71, 72.
Palæocrinus chapmani Hudson, Bull. New York State Mus., 149, 1911, p. 244, fig. 20.
Chazyan (Aylmer): Lot 26, Front Concession of Clarence, Canada.

Palæocrinus pulchellus Billings.

Palæocrinus pulchellus Billings, Geol. Surv. Canada, dec. 4, 1859, p. 46.

Cyathocrinus pulchellus Wachsmuth and Springer, Proc. Acad. Nat. Sci. Philadelphia, 1879, p. 310 (Rev. Pal., pt. 1, p. 87).

Trenton (Curdsville): Ottawa, Ontario.

Palæocrinus rhombiferus Billings.

Palæocrinus rhombiferus Billings, Geol. Surv. Canada, dec. 4, 1859, p. 45.

Cyathocrinus rhombiferous Wachsmuth and Springer, Proc. Acad. Nat. Sci. Philadelphia, 1879, p. 310 (Rev. Pal., pt. 1, p. 87).

Trenton (Curdsville): Ottawa, Ontario.

Palæocrinus striatus Billings.

Palæocrinus striatus Billings, Geol. Surv. Canada, dec. 4, 1859, p. 25, pl. 1, figs. 5a, 5b.—Miller, N. A. Geol. Pal., 1889, p. 267, figs. 383, 384.—Hudson, Bull. New York State Mus., 149, 1911, pl. 5–6, figs. 1–4; figs. 4–10, 12–19.

Cyathocrinus striatus Wachsmuth and Springer, Proc. Acad. Nat. Sci. Philadelphia, 1879, p. 310 (Rev. Pal., pt. 1, p. 87), (gen. ref.).

Chazyan (Aylmer): Caughnawaga and Island of Montreal, Canada.

Palæocrinus sulcatus Safford.

Palæocrinus sulcatus Safford, Geol. Tennessee, 1869, p. 286. (Not defined.)

Stones River (Pierce): Central Tennessee.

PALÆOCYCLUS Edwards and Haime. Genotype: P. porpita (Linnæus).

Palæocyclus Edwards and Haime, Compt. Rend. de l'Acad. Sci., 29, 1849, p. 70; Mon. Polyp. Foss. Terr. Pal., 1851 (Arch. du Mus. d'Hist. Nat., 5), p. 203.—Milne-Edwards, Hist. Nat. d. Corall., 3, 1860, p. 47.—Duncan, Phil. Trans. Roy. Soc. London, 157, 1867, p. 651, pl. 32, figs. 6a–e; Proc. Roy. Soc. London, 1867, p. 460.—Dybowski, Archiv. f. Naturf. Liv.-Ehst. und Kurl., 5, 1873, pp. 334, 360.—Zittel, Handb. Pal., 1, 1879, p. 227.—Roemer, Leth. geog., pt. 1, Leth. Pal., 1883, p. 345.—Miller, N. A. Geol. Pal., 1889, p. 199.—Sherzer, Amer. Geol., 7, 1891, pp. 278–283.—Koken, Die Leitfossilien, Leipzig, 1896, p. 308.—Grabau and Shimer, N. A. Index Fossils, 1, 1906, p. 64.—Zittel-Eastman Textb. Pal., 1, 1913, p. 74.

Palæocyclus rotuloides (Hall).

Cyclolites rotuloides Hall, Pal. New York, 2, 1852, p. 42 pl. 17, figs. 4a–e.

Palæocyclus rotuloides Miller, N. A. Geol. Pal., 1889, p. 199, fig. 203.—Grabau and Shimer, N. A. Index Fossils, 1, 1906, p. 65.

Upper Clinton: Near Clinton, Oneida County, New York; Pennsylvania; Maryland.

PALÆOCYSTIS Haeckel. See Palæocystites Billings.

Palæocystis pentolena Haeckel. Not recognized.

Palæocystis pentolena Haeckel, Amphorideen u. Cystoideen Leipzig, 1896, p. 69, pl. 1, figs. 5, 5b.

"Lower Silurian: Canada."

PALÆOCYSTITES Billings. Genotype: Actinocrinus tenuiradiatus Hall

Palæocystites Billings, Geol. Surv. Canada, dec. 3, 1858, p. 68.—Chapman, Expos. Min. Geol., 1864, p. 109.—Zittel, Handb. Pal., 1, 1879, p. 418.—Miller, N. A. Geol. Pal., 1889, p. 267.—Haeckel, Amphor. und Cystoid., 1896, p. 69.—Bather, Treatise on Zool., pt. 3, Echinoderma, London, 1900, p. 54.—Zittel-Eastman Textb. Pal., 1, 1900, p. 184.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 462.—Springer, Zittel-Eastman Textb. Pal., 2d ed., 1913, p. 152.

Palæocystis Haeckel, Amphorideen u. Cystoideen, Leipzig, 1896, p. 69.

PALÆOCYSTITES CHAPMANI Billings. See Palæocrinus chapmani.

Palæocystites dawsoni Billings.
Palæocystites Dawsoni Billings, Geol. Surv. Canada, dec. 3, 1858, p. 70.—Hudson, Bull. New York State Mus., 149, 1911, p. 247, figs. 21-34.
Chazyan (Aylmer): Montreal, Quebec.

Palæocystites pulcher Billings.
Palæocystites pulcher Billings, Canadian Nat. Geol., 4, 1859, p. 430.
Chazyan (Mingan): Mingan Islands, Canada.

Palæocystites tenuiradiatus (Hall).
Actinocrinus tenuiradiatus Hall, Pal. New York, 1, 1847, p. 18, pl. 4, figs. 8, 9.
Palæocystites tenuiradiatus Billings, Canadian Org. Rem., Geol. Surv. Canada, dec. 3, 1858, p. 69, figs. 1-3; Amer. Jour. Sci. Arts, 2d ser., 48, 1869, p. 78; Canadian Nat., n. s., 4, 1869, p. 287; Ann. Mag. Nat. Hist., 4th ser., 5, 1870, p. 260; Pal. Foss., Geol. Surv. Canada, 2, pt. 1, 1874, p. 99.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 462.
Chazyan: Chazy, etc., New York; Quebec.

PALÆODICTYOTA Whitfield. Genotype: Inocaulis anastomotica Ringueberg.
Palæodictyota Whitfield, Bull. Amer. Mus. Nat. Hist., 16, 1902, p. 399.—Ruedemann, Mem. New York State Mus., 11, pt. 2, 1908, p. 198.

Palæodictyota anastomotica (Ringueberg).
Inocaulis anastomotica Ringueberg, Proc. Acad. Nat. Sci. Philadelphia, 39, 1888, pp. 131, 132, pl. 7, fig. 2.
Palæodictyota ramulosa Whitfield, Bull. Amer. Mus. Nat. Hist., 16, 1902, p. 399, pl. 53, figs. 1, 2.
Palæodictyota anastomotica Ruedemann, Mem. New York State Mus., 11, pt. 2, 1908, p. 200, pl. 6, fig. 4, figs. 102, 103.
Niagaran: Lockport and Middleport, New York (Rochester); Hamilton, Ontario.

Palæodictyota bella (Hall and Whitfield).
Inocaulis bella Hall and Whitfield, Geol. Surv. Ohio Pal. 2, 1875, p. 122, pl. 6., fig. 2.—Spencer, Canadian Nat., 8, 1875, p. 458; 10, 1882, p. 65; Bull. Mus. Univ. State Missouri, 1, 1884, pp. 14, 35; Trans. Acad. Sci. St. Louis, 4, 1884, pp. 564, 585.—Gurley, Jour. Geol., 4, 1896, pp. 99, 308.
Palæodictyota bella Ruedemann, Mem. New York State Mus., 11, pt. 2, 1908, p. 203, pl. 3, fig. 7; text figs. 105-107.
Niagaran: Yellow Springs, Ohio; Hamilton, Ontario (Rochester).
Plesiotype.—Cat. No. 54279, U.S.N.M.

Palæodictyota bella recta Ruedemann.
Palæodictyota bella mut. recta Ruedemann, Mem. New York State Mus., 11, 1908, p. 204, pl. 6, fig. 6; pl. 7, fig. 6.
Upper Clinton: Clinton, New York.

Palæodictyota clintonensis Ruedemann.
Palæodictyota clintonensis Ruedemann, Mem. New York State Mus., 11, 1908, pt. 2, p. 203, pl. 6, fig. 5; pl. 7, fig. 5; pl. 8, fig. 3, text fig. 104.
Upper Clinton: Clinton, New York.

PALÆODICTYOTA RAMULOSA Spencer. See Palæodictyota anastomotica.

PALÆOGLOSSA Cockerell. See Lingula subgenus Palæoglossa.

PALÆOMANON Roemer. Genotype: Siphonia cratera Roemer.

Palæomanon Roemer, Sil. Fauna West. Tennessee, Breslau, 1860, p. 12; Cincinnati Quart. Jour. Sci., 1, 1874, pp. 247, 248.—Zittel, Neues Jahrb. Min. Geol. Pal., 1877, p. 354; Ann. Mag. Nat. Hist., 4th ser., 20, 1877, p. 501; Abh. math.-phys. Classe d. k. bay. Akad. d. Wiss., 13, 1 Abth., 1878, p. 45.—Roemer, Leth. geog., 1 Theil. Leth. Pal., Erste Lief, 1880, p. 310.—Zittel, Neues Jahrb. Min. Geol. Pal., 2, 1884, p. 75; Ann. Mag. Nat. Hist., 5th ser., 14, 1884, p. 271.—Miller, N. A. Geol. Pal., 1889, p. 161; Zittel-Eastman Textb. Pal., 1, 1900, p. 50; Zittel-Eastman Textb. Pal., 2d ed., 1913, p. 56.

Astylomanon Rauff, Palæontographica, 40, 1894, p. 313.

Palæomanon bursa (Hall).

Astylospongia (Palæomanon) bursa Hall, 28th Rep. New York State Mus. Nat. Hist., doc. ed., 1875, 1877, pls. 15, 16; mus. ed., 1879, p. 105, pl. 3, figs. 15, 16; 11th Ann. Rep. Indiana Dep. Geol. Nat. Hist., 1882, p. 234, pl. 1, fig. 4; pl. 2, figs. 15, 16.—Rauff, Palæontographica, 40, 1894, p. 309.

Niagaran (Waldron): Waldron, Indiana.

Palæomanon cratera (Roemer).

Siphonia cratera Roemer, Leonh. and Bronn. Jahr., 1848, p. 685.

Palæomanon cratera Roemer, Sil. Fauna West. Tennessee, Breslau, 1860, p. 13, pl. 1, figs. 4, 4a; Cincinnati Quart. Jour. Sci., 1, 1874, p. 192.—Zittel, Ann. Mag. Nat. Hist., 5th ser., 14, 1884, p. 272, fig. 2; Neues Jahrb. f. Min. Geol. Pal., 12, 1884, pl. 1, fig. 2.—Miller, N. A. Geol. Pal., 1889, p. 161, fig. 111.

Astylomanon cratera Rauff, Palæontographica, 40, 1894, p. 314, pl. 11, figs. 7-12; pl. 12, fig. 3.

Astylomanon cratera prototypum Rauff, ibid., p. 317, figs. 64A, A; pl. 13, fig. 1.

Astylomanon cratera aryballium Rauff, ibid., p. 317, figs. 64C–E, G, H; pl. 11, fig. 7.

Astylomanon cratera balantium Rauff, ibid., p. 317, figs. 64B1, B2, 65; pl. 11, figs. 8, 9.

Astylomanon cratera lecythium Rauff, ibid., p. 318, fig. 64F; pl. 11, figs. 10, 11.

Astylomanon cratera promiscuum Rauff, ibid., p. 318, figs. 64J–L, M, N, P-R, 66, pl. 13, fig. 2.

Astylomanon cratera poterium Rauff, ibid., p. 319, fig. 64O; pl. 12, fig. 3.

Astylomanon cratera cantharium Rauff, ibid., p. 319, figs. 64S–W; pl. 13, figs. 3, 4.

Astylomanon cratera cylix Rauff, ibid., p. 319, figs. X, Y, 67, 68; pl. 13, fig. 5.

Astylomanon cratera patera Rauff, ibid., p. 320, fig. 64Z.

Astylomanon (Palæomanon) cratera Foerste, Jour. Geol., 11, 1903, p. 713.

Niagaran (Brownsport): Numerous localities in Perry, Decatur, and other counties, west Tennessee.

Palæomanon pleuriexcavatum (Rauff).

Astylomanon pleuriexcavatum Rauff, Palæontographica, 40, 1894, p. 323, fig. 73; pl. 13, fig. 8.

Niagaran (Brownsport): Decatur and Hardin Counties, Tennessee.

Palæomanon verrucosum (Rauff).

Astylomanon verrucosum Rauff, Palæontographica, 40, 1894, p. 320, figs. 69, 70; pl. 13, figs. 6, 7.—Foerste, Jour. Geol., 11, 1903, p. 714.

Astylospongia præmorsa (part) Roemer, Sil. Fauna Tennessee, 1860, p. 8, pl. 1, fig. 1b.

Niagaran (Brownsport): Decatur and Hardin Counties, Tennessee.

Palæomanon verrucosum bullifera (Rauff).
Astylomanon verrucosum var. bullifera Rauff, Palæontographica, 40, 1894, p. 321, figs. 71, 72.
Niagaran (Brownsport): Decatur and Hardin Counties, Tennessee.

PALÆONAUTILUS Remele. See Trocholites Conrad.

PALÆONAUTILUS PLANORBIFORMIS Remele. See Trocholites canadensis.

PALÆOPECTEN Williams. Genotype: P. cobscooki Williams.
Palæopecten Williams, Proc. U. S. Nat. Mus., 45, 1913, p. 331.

Palæopecten cobscooki Williams.
Palæopecten cobscooki Williams, Proc. U. S. Nat. Mus., 45, 1913, p. 332, pl. 29, fig. 13.
Silurian (Edmunds): Cobscook River, Washington County, Maine.
Holotype.—Cat. No. 58953, U.S.N.M.

Palæopecten danbyi (McCoy).
Avicula danbyi McCoy, Ann. Nat. Hist., 2d ser., 7, 1851, p. 59; British Pal. Foss., 1855, p. 258, pl. 2, figs. 11 and 13.
Palæopecten danbyi Williams, Proc. U. S. Nat. Mus., 45, 1913, p. 332.
Silurian (Edmunds): Eastport quadrangle, Washington County, Maine.

Palæopecten transversalis Williams.
Palæopecten transversalis Williams, Proc. U. S. Nat. Mus., 45, 1913, p. 333, pl. 29, figs. 17 and 18.
Silurian (Edmunds): Cobscook River, Trescott, Eastport quadrangle, Maine.
Holotype.—Cat. No. 58954, U.S.N.M.

PALÆOPHONUS OSBORNI Whitfield. See Proscorpius osborni.

PALÆOPHYCUS Hall. Genotype: P. tubulare Hall.
Palæophycus Hall, Pal. New York, 1, 1847, p. 7.—Nathorst, Ofvers. K. Vet.-Akad. Forhandl, 30, 1873, p. 46.—Roemer, Leth. geog., 1, Theil, Leth Pal., Erste Lief, 1880, p. 131.—Nathorst, Kongl. Sven. Vet.-Akad. Handl., 18, No. 7, 1881, p. 38, 90.—James, Jour. Cincinnati Soc. Nat. Hist., 7, 1885, p. 157.—Hinde, Geol. Mag., dec. 3, 4, 1887, p. 228.—Miller, N. A. Geol. Pal., 1889, p. 130.

alæophycus beauharnoisense Billings.
Palæophycus Beauharnoisensis Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 98 (adv. sheets, 1862).
Canadian (Beekmantown): Beauharnois, Quebec.

alæophycus beverlyense Billings.
Palæophycus Beverlyensis Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 97, fig. 86 (adv. sheets, 1862).—Roemer, Leth. geog., Leth. Pal., 1, Atlas, 1876, pl. 2, fig. 1.—Rauff, Neues Jahrb. Min., Geol. Pal., 2, 1891, p. 103.
Canadian (Beekmantown): Beverly, Quebec.

alæophycus flexuosum James.
Paleophycus flexuosus James, Paleontologist, No. 3, 1879, p. 18; Jour. Cincinnati Soc. Nat. Hist., 7, 1884, p. 129, pl. 6, fig. 1; 14, 1891, p. 46.
Eden: Near Milford, Ohio.

alæophycus funiculus Billings.
Palæophycus funiculus Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 98 (adv. sheets, 1862).
Canadian (Beekmantown): Edwardstown and L'Original, Canada.

Palæophycus irregulare Hall.
Palæophycus irregularis Hall, Pal. New York, 1, 1847, p. 8, pl. 2, fig. 3.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 587, fig.
Canadian (Beekmantown): Near Chazy, near Keeseville, etc., New York.

Palæophycus obscurum Billings.
Palæophycus obscurus Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 98 (adv. sheets, 1862).
Trenton: Ottawa, Ontario.

Palæophycus rugosum Hall.
Palæophycus rugosus Hall, Pal. New York, 1, 1847, p. 63, pl. 21, fig. 2.—James, Jour. Cincinnati Soc. Nat. Hist., 7, 1885, p. 157.
Trenton: Middleville, etc., New York.

Palæophycus simplex Hall.
Palæophycus simplex Hall, Pal. New York, 1, 1847, p. 63, pl. 22, figs. 1a-d.—James, Jour. Cincinnati Soc. Nat. Hist., 7, 1885, p. 158.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 587, figs.
Trenton: Middleville, New York.

Palæophycus striatum Hall.
Palæophycus striatus Hall, Pal. New York, 2, 1852, p. 22, pl. 10, fig. 1a-d, 2.
Clinton: Clinton, New York.

Palæophycus tortuosum Hall.
Palæophycus tortuosus Hall, Pal. New York, 2, 1852, p. 6, pl. 3, figs. 2a, b.
Richmond (Queenston): Irondequoit Bay, and mouth of Genesee River, New York.

Palæophycus tubulare Hall.
Palæophycus tubularis Hall, Pal. New York, 1, 1847, p. 7, pl. 2, figs. 1, 2, 4, 5.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 588, fig.
Canadian (Tribes Hill): Amsterdam, Canajoharie, etc., New York.

PALÆOPHYLLUM Billings. See Columnaria subgenus Palæophyllum.

PALÆOPHYLLUM DIVARICANS Nicholson. See Streptelasma divaricans.

PALÆOPHYLLUM RUGOSUM Billings. See Columnaria (Palæophyllum) stokesi.

PALÆOPORA INTERSTINCTA var. SUBTUBULATA McCoy. See Heliolites subtubulatus.

PALÆOPORA MEGASTOMA McCoy. See Heliolites megastoma.

PALÆOPTERIA Whiteaves. Genotype: P. parvula Whiteaves.
Palæopteria Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 3, 1897, p. 181.

Palæopteria parvula Whiteaves.
Palæopteria parvula Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 3, 1897, p. 181, pl. 20, figs. 1-3.
Pterinea parvula Miller, N. A. Geol. Pal., 2d App., 1897, p. 784 (gen. ref.).
Black River or Richmond: Inmost Island, Lake Winnipeg, Canada.

PALÆOSACCUS Hinde. Genotype: P. dawsoni Hinde.
Palæosaccus Hinde, Geol. Mag., dec. 3, 10, 1893, p. 57.—Dawson, Trans. Roy. Soc. Canada, 2d ser., 2, sec. 4, 1896, p. 112.—Miller, N. A. Geol. Pal., 2d App., 1897, p. 722.

Palæosaccus dawsoni Hinde.

Palæosaccus Dawsoni, Hinde, Geol. Mag., dec. 3, 10, 1883, p. 58, pl. 4.—Rauff, Palæontographica, 40, 1894, p. 254.—Dawson, Trans. Roy. Soc. Canada, 2d ser., 2, sec. 4, 1896, p. 112, figs. 22, 23, pl. 3, fig. 9, pl. 4.

Canadian? (Levis?): Little Metis, Quebec.

PALÆOSPONGIA D'Orbigny. See Ischadites Murchison.

PALÆOSPONGIA TRENTONENSIS Miller. See Zittelella trentonensis.

PALASTERINA Billings (part). See Schuchertella Gregory.

PALEOFAVOSITES Twenhofel. Genotype: Favosites aspera D'Orbigny.

Paleofavosites Twenhofel, Bull. Victoria Mem. Mus., 13, 1914, p. 24.

Paleofavosites asper D'Orbigny.

Favosites alveolaris Lonsdale (not Goldfuss), Murch. Sil. Syst., 1839, p. 681, pl. 15, bis. figs. 1, 2.

Favosites aspera D'Orbigny, Prodr. de Pal., 1, 1850, p. 49.—Milne-Edwards and Haime, Polyp. Foss. des Terr. Palaeoz., 1851, p. 234; British Foss. Corals, 1855, p. 257, pl. 60, figs. 3, 3a.—McCoy, British Paleoz. Foss., 1855, p. 20.—Nicholson, Canadian Jour., n. s., 16, 1873, p. 40; Geol. Surv. Ohio, Pal., 2, 1875, p. 225.—Lebedeff, Obersil. fauna Timan, 1892, p. 8, pl. 1, figs. 1a–c.—Weissermel, Zeits. d. d. geol. Gesell., 46, 1894, p. 648, pl. 51, fig. 9.—Lambe, Cont. Can. Pal., Geol. Surv. Canada, 4, pt. 1, 1899, p. 4, pl. 1, fig. 2.—Whiteaves, Geol. Surv. Canada, Pal. Foss., 3, pt. 4, 1906, p. 280.—Parks in Tyrrell, 22d Rep. Ontario Bur. Mines, 1913, p. 32.

Favosites? capax Billings, Cat. Sil. Foss. Anticosti, 1866, p. 6.

Favosites Niagarensis Rominger (not Hall), Geol. Surv. Michigan, Foss. Corals, 1876, p. 22, pl. 5, fig. 1.

Favosites prolificus Billings, Canadian Nat. Geol., n. s., 2, 1865, p. 429; Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, pp. 6, 32.—Whiteaves, Geol. Surv. Canada, Rep. Progr. for 1878–79, 1880, p. 45c; Pal. Foss. Geol. Surv. Canada, 3, pt. 2, 1895, p. 113; ibid., pt. 3, 1897, p. 156.

Paleofavosites aspera Twenhofel, Bull. Victoria Mem. Mus., 3, 1914, p. 24.

Early and Middle Silurian: Europe; Island of Anticosti, Canada (English Head—Chicotte); Manitoba; Wyoming, etc.

PALEOPUPA Foerste. Genotype: P. abrupta Foerste.

Paleopupa Foerste, Geol. Surv. Ohio, Pal., 7, 1893, p. 556.

Paleopupa abrupta Foerste.

Paleopupa abrupta Foerste, Geol. Surv. Ohio, Pal., 7, 1893, p. 556, pl. 37a, fig. 21a–b.

Upper Medinan (Brassfield): Huffmans Quarry, near Dayton, Ohio.

PALESCHARA Hall. Genotype: P. incrustans Hall.

Paleschara Hall, 26th Ann. Rep. New York State Mus., 1874, p. 107.—Zittel, Handb. Pal., 1, Munich, 1880, p. 604.—Ulrich, Jour. Cincinnati Soc. Nat. Hist., 5, 1882, p. 157.—Hall and Simpson, Pal. New York, 6, 1887, p. xviii.—Miller, N. A. Geol. Pal., 1889, p. 313.—Pocta, Syst. Sil. Centre Boheme, 8, pt. 1, 1894, p. 9.—Grabau, Bull. Buffalo Soc. Nat. Sci., 6, 1899, p. 170.—Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 54.—Cumings, Amer. Jour. Sci., 4th ser., 17, 1904, pp. 49, 74.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 166.

PALESCHARA? ASPERA Hall. See Spatiopora maculata.

Paleschara beani (James).

Ceramopora? beani James, Paleontologist, No. 1, 1878, p. 5; Jour. Cincinnati Soc. Nat. Hist., 7, 1884, p. 23, fig. 3–3b; James and James, ibid., 11, 1888, p. 37.

Paleschara beani Ulrich, Amer. Geol. 1, 1888, p. 186.—Bassler, Proc. U. S. Nat. Mus., 30, 1906, p. 46.

Richmond (Waynesville): Warren and Clinton Counties, Ohio.

Paleschara? incrassata Hall.

Paleschara incrassata Hall, 28th Ann. Rep. New York State Mus., mus. ed., 1879, p. 121; 11th Ann. Rep. Indiana Geol. Nat. Hist., 1882, p. 246.

Niagaran (Waldron): Waldron, Indiana.

PALESCHARA MACULATA Hall. See Spatiopora maculata.

Paleschara? offula Hall.

Paleschara offula Hall, 28th Ann. Rep. New York State Mus. (doc. ed.), 1876, pl. 8, figs. 7, 8; mus. ed., 1879, p. 120, pl. 8, figs. 7, 8; 11th Ann. Rep. Indiana Geol. Nat. Hist., 1882, p. 245, pl. 7, figs. 7, 8.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 591, fig.

Leptotrypa offula Ulrich, Jour. Cincinnati Soc. Nat. Hist., 6, 1883, p. 158.

Niagaran (Waldron): Waldron, Indiana.

PALESCHARA? SPHÆRION Hall. See Leptotrypa? sphærion.

Paleschara ulrichi Ruedemann.

Paleschara ulrichi Ruedemann, Bull. New York State Mus., 162, 1912, p. 90.

Trenton (Snake Hill): Snake Hill, New York.

PANENKA Barrande. Genotype: P. bohemica Barrande.

Panenka Barrande, Syst. Sil. du Centre Boheme, 6, 1881, p. 128; Acephalés, Extr. Syst. Sil. du Centre Boheme, 1881, pp. 11, 204.—Hall, Pal. New York, 5, pt. 1, Lam. 2, 1885, p. xxv.—Miller, N. A. Geol. Pal., 1889, p. 500.—Whidborne, Mon. Dev. Fauna South England, 3, Pal. Soc., 1896, p. 72.—Whiteaves, Ottawa Nat., 15, 1902, p. 263.

Panenka canadensis Whiteaves.

Panenka canadensis Whiteaves, Ottawa Nat., 15, 1902, p. 265, pl. 15, figs. 1, 2.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 389.—Grabau, Michigan Geol. Surv., Geol. Ser., 1, 1909, p. 163, pl. 22, figs. 1–2.

Upper Monroan (Amherstburg): Detroit River, opposite Amherstburg, Ontario.

PARABOLINA Salter. Genotype: Entomostracites spinulosus Wahlenberg.

Parabolina Salter, Mem. Geol. Surv. United Kingdom, dec. 2, 1849, pl. 9, p. 2.—Angelin, Pal. Scandinavica, 3d ed., Holmiae, 1878, p. 45.—Koken, Die Leitfossilien, Leipzig, 1896, p. 20, fig. 11.—Moberg and Moller, Geol. Foren. Stockholm Forhandl., 20, 1898, p. 229.—Lindstrom, Kongl. Sven. Vet.-Akad. Hand., 34, No. 8, 1901, pp. 18, 22.—Lake, Paleontographical Soc., 1908, p. 61.

Parabolina dawsoni Matthew.

Parabolina Dawsoni Matthew, Bull. Nat. Hist. Soc. New Brunswick, No. 19, 1901, p. 282, pl. 5, figs. 6a–f; Geol. Surv. Canada, Rep. Cambrian Rocks Cape Breton, 1903, p. 223, pl. 17, fig. 6.

Canadian (Bretonian—Div. C3b): East Bay, east of Bras d'Or Lake, Cape Breton, Nova Scotia.

Parabolina grandis (Matthew).

Parabolina heres var. grandis Matthew, Trans. Royal Soc. Canada, 9, sec. 4, 1892, p. 52, pl. 13, fig. 7.

Canadian (Bretonian—Div. C3b): Navy Island, St. John Harbor, New Brunswick.

PARABOLINA HERES var. GRANDIS Matthew. See Parabolina grandis.

Parabolina heres lata Matthew.
Parabolina heres var. lata Matthew, Trans. Royal Soc. Canada, 9, sec. 4, 1892, p. 51, pl. 13, figs. 6a–f.
Canadian (Bretonian—Div. C3b): Navy Island, St. John Harbor, New Brunswick.

Parabolina spinulosa (Wahlenberg).
Entomostracites spinulosus Wahlenberg, Petr. Tell. Suec., 1821, p. 38, pl. 1, fig. 3.
Olenus spinulosus Dalman, K. Vet.-Akad. Handl., for 1826, 1827, p. 256; Uber die Palæaden, 1828, p. 56, pl. 6, fig. 4.
Paradoxides spinulosus Milne Edwards, Hist. Nat. d. Crust., 3, 1840, p. 342.—Burmeister, Org. der Tril., Berlin, 1843, p. 80; ibid., 1846, p. 68.
Olenus (Parabolina) spinulosa Salter, Cat. Camb. Sil. Foss., 1873, p. 11.—Brogger, Die sil. Etagen 2-3, Kristiania, 1882, p. 100, pl. 1, fig. 12a–e (cites bib.).
Parabolina spinulosa Angelin, Pal. Scandinavica, 1854, p. 46, pl. 25, fig. 9.—Matthew, Trans. Royal Soc. Canada, 9, sec. 4, 1892, p. 51, pl. 13, figs. 5a–d.—Tornquist, Geol. Mag., dec. 4, 3, 1896, p. 567.—Koken, Die Leitfossilien, Leipzig, 1896, p. 18, fig. 11.—Lindstrom, Kongl. Sven. Vet.-Akad. Handl., 34, No. 8, 1901, p. 33, pl. 5, fig. 31.—Lake, Paleontographical Soc. 1908, p. 62, pl. 6, figs. 8–11.
Lower Ordovician: Europe; St. John, New Brunswick (Bretonian—Div. C3a).

PARABOLINELLA Brögger. Genotype: P. limitis Brögger.
Parabolinella Brögger, Die sil. Etagen 2-3, Kristiania, 1882, p. 102.—Zittel, Handb. Pal., 2, 1885, p. 595.—Koken, Die Leitfossilien, Leipzig, 1896, p. 20.—Lindstrom, Kongl. Sven. Vet.-Akad. Handl., 34, No. 8, 1901, p. 22.—Lake, Paleontographical Soc., 1908, p. 63.

Parabolinella andina Hoek.
Parabolinella andina Hoek, Neues Jahrb. Min., Geol. Pal., 34, 1912, p. 214, pl. 7, figs. 7–9.
Lowest Ordovician: Salitre, Argentina-Bolivia boundary.

Parabolinella limitis (Brögger).
Olenus (Parabolinella) limitis Brogger, Die sil. Etagen, 2-3, Kristiania, 1882, p. 102, pl. 3, fig. 2a, b, 4a.
Parabolinella limitis Frech, Leth. geog., 1, Leth. Pal., 2, 1 Leif., 1897, pl. 1b, fig. 10.
Parabolinella cf. limitis Matthew, Bull. Nat. Hist. Soc. New Brunswick, No. 20, 1902, p. 412; Geol. Surv. Canada, Rep. Cambrian Rocks Cape Breton, 1903, p. 226.
Lower Ordovician: Europe; McLeod Brook, near Boisdale, Cape Breton, Nova Scotia (Bretonian—Div. C 3c2).

Parabolinella posthuma Matthew.
Parabolinella posthuma Matthew, Trans. Roy. Soc. Canada, 10, sec. 4, 1893, p. 107, pl. 7, figs. 15a, F.
Canadian (Bretonian—Div. C 3d): Suspension Bridge, St. John, New Brunswick.

Parabolinella quadrata Matthew.
Parabolinella quadrata Matthew, Bull. Nat. Hist. Soc. New Brunswick, No. 20, 1902, p. 411, pl. 18, fig. 7; Geol. Surv. Canada, Rep. Cambrian Rocks Cape Breton, 1903, p. 225, pl. 18, fig. 7.
Canadian (Bretonian—Div. C 3c2): McLeod Brook, near Boisdale, Cape Breton, Nova Scotia.

PARABOLINOPSIS Hoek. Genotype: P. mariana Hoek.
Parabolinopsis Hoek, Neues Jahrb. Min. Geol. Pal., 34, 1912, p. 226.

Parabolinopsis mariana Hoek.
Parabolinopsis mariana Hoek, Neues Jahrb. Min. Geol. Pal., 34, 1912, p. 226, pl. 7, figs. 1-3.
Ordovician: Tarija, Bolivia.

PARACTINOCERAS Hyatt. See Actinoceras Bronn.

PARADOXIDES ARCUATUS Harlan. See Triarthrus becki.

PARADOXIDES BECKII Green. See Triarthrus becki.

PARADOXIDES BOLTONI Bigsby. See Arctinurus boltoni.

PARADOXIDES EATONI Hall. See Triarthrus becki.

PARADOXIDES SPINULOSUS Burmeister. See Parabolina spinulosa.

PARADOXIDES TETRAGONOCEPHALUS Emmrich. See Asaphus(?) tetragonocephalus.

PARADOXIDES TRIARTHRUS Harlan. See Triarthrus becki.

PARALICHAS Reed. See Amphilichas Raymond.

PARALLELODUS Branson. Genotype: P. obliquus Branson.
Parallelodus Branson, Trans. Acad. Sci. St. Louis, 18, 1909, p. 43.

Parallelodus obliquus Branson.
Parallelodus obliquus Branson, Trans. Acad. Sci. St. Louis, 18, 1909, p. 43, pl. 7, figs. 9, 10.
Black River (Auburn—Decorah): Lincoln County, Missouri.

PARALLELOPORA Holtedahl. Genotype: P. favositiformis Holtedahl.
Parallelopora Holtedahl, Second Arct. Exp. "Fram," 1898–1902, No. 32, 1914, p. 13.

Parallelopora favositiformis Holtedahl.
Parallelopora favositiformis Holtedahl, Second Arct. Exp. "Fram," 1898-1902, No. 32, 1914, p. 13, pl. 4, figs. 3, 4; pl. 5, figs. 1–5.
Helderbergian (Lower beds): Near Borgen, Southwestern Ellesmereland, Arctic America.

PARASTROPHIA Hall and Clarke. Genotype: Atrypa hemiplicata Hall.
Parastrophia Hall and Clarke, Pal. New York, 8, pt. 2, 1893, p. 221; 13th Ann. Rep. New York State Geol., 1895, p. 839.—Schuchert, Zittel-Eastman Textb. Pal., 1, 1900, p. 321; 2d ed., 1913, p. 394.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 271.

Parastrophia divergens Hall and Clarke.
Parastrophia divergens Hall and Clarke, Pal. New York, 8, pt. 2, 1895, pp. 222, 366, pl. 63, figs. 4–7; 48th Rep. New York State Mus., 2, for 1895, 1897, p. 364; pl. 10, figs. 11–14; 14th Rep. State Geol. New York for 1894, 1897, p. 364, pl. 10, figs. 11–14.
Richmond (Fernvale): Wilmington, Illinois.

Parastrophia greenei Hall and Clarke.
Parastrophia greenii Hall and Clarke, Pal. New York, 8, pt. 2, 1895, pp. 222, 367, pl. 63, figs. 17–20, 22; 48th Rep. New York State Mus., 2, for 1895, 1897, p. 364, pl. 10, figs. 1–5; 14th Rep. State Geol. New York for 1894, 1897, p. 364, pl. 10, figs. 1–5.
Niagaran (Racine): Milwaukee, Wisconsin.

Parastrophia hemiplicata Hall.

Atrypa hemiplicata Hall, Pal. New York, 1, 1847, p. 144, pl. 33, fig. 10.—Billings, Canadian Nat. Geol., 1, 1856, p. 208, figs. 20–23.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 190, pl. 10, fig. 10.

Pentamerus hemiplicatus Hall, 12th Rep. New York State Cab. Nat. Hist., 1859, p. 66.—Billings, Canadian Jour., 4, 1859, p. 316.

Camarella hemiplicata Billings, Geol. Canada, 1863, p. 168, fig. 154.—Chapman, Canadian Jour., n. s., 7, 1862, p. 114, fig. 106; Expos. Min. and Geol. Canada, 1864, p. 118, fig. 106; p. 171, fig. 188.—Miller, N. A. Geol. Pal., 1889, p. 338, fig. 545.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 112, figs.

Anastrophia? hemiplicata Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 382, pl. 30, figs. 29–31.—Whiteaves, Pal. Foss., 3, pt. 3, 1897, p. 167.

Parastrophia hemiplicata Hall and Clarke, Pal. New York, 8, pt. 2, 1893, p. 221, pl. 63, figs. 1–3.—Schuchert, Proc. U. S. Nat. Mus., 22, 1900, p. 158.—Ruedemann, Bull. New York State Mus., 49, 1902, p. 26.—Weller, Geol. Surv. New Jersey, Pal. 3, 1903, p. 158, pl. 10, figs. 11–14.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 271, fig. 327.—Wilson, Bull. Canada Geol. Surv., Mus., 2, 1914, pp. 1–10, pl. 4, figs. 1–34.

Atrypa circulus Hall, Pal. New York, 1, 1847, p. 142, pl. 33, fig. 7; 12th Rep. New York State Cab. Nat. Hist., 1859, p. 65.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 190, pl. 10, fig. 7.

Camarella circulus Miller, Amer. Pal. Foss., 1877, p. 107.

Camarella bernensis Sardeson, Bull. Minnesota Acad. Nat. Sci., 3, 1892, p. 328, pl. 4, figs. 4–6.

Trenton: Middleville, Watertown, etc., New York; Pennsylvania; Wisconsin; Minnesota; New Jersey; Ontario; Manitoba; Baffin Land.

Parastrophia hemiplicata rotunda (Winchell and Schuchert).

Anastrophia? hemiplicata var. rotunda Winchell and Schuchert, Minnesota Geol. Surv., 3, 1893, p. 383, pl. 30, figs. 32–35.

Trenton (Prosser): Cannon Falls, Minnesota; Decorah, Iowa.

Parastrophia latiplicata Hall and Clarke.

Parastrophia latiplicata Hall and Clarke, Pal. New York, 8, pt. 2, 1895, pp. 222, 368, pl. 63, figs. 23–27; 48th Rep. New York State Mus., 2, for 1895, 1897, p. 365, pl. 10, figs. 6–10; 14th Rep. State Geol. New York for 1894, 1897, p. 365, pl. 10, figs. 6–10.

Niagaran (Racine): Milwaukee, Wisconsin.

Parastrophia lenticularis (Billings).

Camarella lenticularis Billings, Cat. Sil. Foss. Anticosti, 1866, p. 45.

Richmond (English Head, Charleton): Gamachian and Anticostian (Becsie River); Reef Point, etc., Anticosti.

Parastrophia multiplicata Hall and Clarke.

Parastrophia multiplicata Hall and Clarke, Pal. New York, 8, pt. 2, 1895, pp. 222, 367, pl. 63, figs. 15, 16, 21; 48th Rep. New York State Mus., 2, for 1895, 1897, p. 365, pl. 10, figs. 15–17; 14th Rep. State Geol. New York for 1894, 1897, p. 365, pl. 10, figs. 15–17.

Niagaran (Racine?): Milwaukee, Wisconsin.

Parastrophia(?) obscura (Hall and Whitfield).

Porambonites obscurus Hall and Whitfield, King's U. S. Geol. Expl., 40th Parl., 4, 1877, p. 234, pl. 1, fig. 16.—Hall and Clarke, Pal. New York, 8, pt. 2, 1893, p. 228.

Parastrophia(?) obscura—Continued.
Parastrophia(?) obscura Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 300.
Pogonip: Pogonip Mountain, White Pine District, Nevada.
Holotype.—Cat. No. 17277, U.S.N.M.

Observation.—Based upon a single ventral valve, which is insufficient to determine whether it belongs to Parastrophia or some rhynchonelloid. It is not a Porambonites (Schuchert).

Parastrophia ops (Billings).
Camarella ops Billings, Geol. Surv. Canada, Pal. Foss., 1, 1865, p. 148, fig. 128 (adv. sheets, 1862).
Parastrophia ops Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 300.
Anticostian (Chicotte): The Jumpers, Anticosti.

Parastrophia reversa (Billings).
Pentamerus reversus Billings, Geol. Survey Canada, Rep. Progr. for 1856, 1857, p. 295; Canadian Jour., 4, 1859, p. 316.
Brachymerus reversus Shaler, Bull. Mus. Comp. Zool., 1, 1865, p. 69.
Anastrophia reversa Miller, Amer. Pal. Foss., 1877, p. 104.
Parastrophia reversa Hall and Clarke, Pal. New York, 8, pt. 2, 1895, pl. 63, figs. 8–14.—Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 301.—Wilson, Canadian Bull. Geol. Surv. Mus., 2, 1914, p. 9, pl. 4, figs. 35–39.
Gamachian (Ellis Bay): Junction Cliff, Anticosti.

Parastrophia scofieldi (Winchell and Schuchert).
Anastrophia? scofieldi Winchell and Schuchert, Minnesota Geol. Surv., 3, 1893, p. 383, pl. 30, figs. 24–28.
Parastrophia scofieldi Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 301.
Trenton (Prosser): Near Cannon Falls, Minnesota.

PASCEOLUS Billings. Genotype: P. globosus Billings.
Pasceolus Billings, Geol. Surv. Canada, Rep. Progr. for 1853–1856, 1857, p. 342; Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 390; Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 69.—Meek and Worthen, Geol. Surv. Illinois, 3, 1868, p. 346.—Miller, Cincinnati Quart. Jour. Sci., 1, 1874, pp. 4, 5.—Kayser, Zeits. d. d. geol. Gesell., 27, 1875, pp. 776–779.—Nicholson and Etheridge, Mon. Sil. Foss. Girvan Dist., 1878, p. 13.—Zittel, Handb. Pal., 1, 1880, p. 728.—Roemer, Leth. geog., 1, Theil, Leth. Pal., Erste Lief, 1880, p. 295.—James, Jour. Cincinnati Soc. Nat. Hist., 9, 1886, p. 248, 246; 14, 1891, p. 58.—Roemer, Neues Jahrb. Min. Geol. Pal., 1, 1888, p. 74.—Miller, N. A. Geol. Pal., 1889, p. 162.—Tschernyschew, Mem. du Comite Geol. Russia, 4, No. 3, 1893, p. 103.

Observation.—See Cyclocrinites Eichwald, of which Pasceolus is probably a synonym.

Pasceolus camdenensis Foerste.
Pasceolus camdenensis Foerste, Bull. Sci. Lab. Denison Univ., 16, 1910, p. 85, pl. 2, fig. 6.
Richmond: Camden, Ohio.

Pasceolus claudei Miller.
Pasceolus claudei Miller, Cincinnati Quart. Jour. Sci., 1, 1874, p. 6, fig. 3; N. A. Geol. Pal., 1889, p. 162, fig. 114.
Cyclocrinus Claudii Stolley Archiv. Anthrop. Geol. Schleswig-Holsteins, 1, Heft 2, 1896, p. 215 (gen. ref.).
Maysville (Bellevue): Near Maysville, Kentucky.

PASCEOLUS? DACTYLIOIDES Meek and Worthen. See Cerionites dactyloides.

Pasceolus darwini Miller.

Pasceolus darwini Miller, Cincinnati Quart. Jour. Sci., 1, 1874, p. 5, figs. 1, 2.—James, Jour. Cincinnati Soc. Nat. Hist., 9, 1886, p. 248; 14, 1891, p. 59.—Miller, N. A. Geol. Pal., 1889, p. 162, figs. 115, 116.—Foerste, Bull. Sci. Lab. Denison Univ., 14, 1909, p. 303, pl. 8, figs. 1a, b.

Cyclocrinus Darwinii Stolley, Archiv. Anthrop. Geol. Schleswig-Holsteins, 1, Heft 2, 1896, p. 215 (gen. ref.).

Astylospongia tumidus James, Paleontologist, 1, 1878, p. 1.—J. F. James, Jour. Cincinnati Soc. Nat. Hist., 9, 1886, p. 247.

Pasceolus(?) tumidus James, Jour. Cincinnati Soc. Nat. Hist., 14, pt. 1, 1891, p. 59, fig. 3.

Maysville (Bellevue): Two miles southeast of Maysville, Kentucky; Cincinnati, Ohio, and vicinity.

Pasceolus globosus Billings.

Pasceolus globosus Billings, Geol. Surv. Canada, Rep. Progr. for 1853–1856, 1857, p. 343; Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 391, fig. 367; Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 70.—Kayser, Zeits. d. d. geol. Gesell., 27, 1875, pp. 777, 780.—Nicholson and Etheridge, Mon. Sil. Foss. Girvan Dist., 1878, p. 14, fig. 1b.—James, Jour. Cincinnati Soc. Nat. Hist., 9, 1886, p. 248; 14, 1891, p. 58.—Foerste, Bull. Sci. Lab. Denison Univ., 17, 1914, pl. 4, fig. 4.

Cyclocrinus globosus Stolley, Archiv. Anthrop. Geol. Schleswig-Holsteins, 1, Heft 2, 1896, p. 215 (gen. ref.).

Trenton: Ottawa, Ontario; Ohio; Kentucky.

PASCEOLUS GREGARIUS Billings. See Nidulites gregarius.

Pasceolus halli Billings.

Pasceolus halli Billings, Geol. Surv. Canada, Rep. Progr. for 1853–56, 1857, p. 342; Geol. Canada, Geol. Surv. Canada, 1863, p. 309, fig. 312; Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 390, fig. 366; Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, pp. 69, 72.—Niles, Proc. Boston Soc. Nat. Hist., 10, 1865, p. 19.—Miller, Cincinnati Quart. Jour. Sci., 1, 1874, p. 5.—Kayser, Zeits. d. d. geol. Gesell., 1875, pp. 779, 780.—Nicholson and Etheridge, Mon. Sil. Foss. Girvan Dist., 1878, p. 14, fig. 1a.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 603, fig.—Miller, N. A. Geol. Pal., 1889, p. 162, fig. 117.

Cyclocrinus Halli Stolley, Archiv. Anthrop. Geol. Schleswig-Holsteins, 1, Heft 2, 1896, p. 215 (gen. ref.).

Gamachian (Ellis Bay) and Anticostian (Becsie River): White Cliff, Gamache Bay, etc., Anticosti.

Plastotype.—Cat. No. 58718, U.S.N.M.

PASCEOLUS INTERMEDIUS Billings. See Nidulites intermedius.

PASCEOLUS(?) TUMIDUS James. See Pasceolus darwini.

PATERULA Barrande. Genotype: P. bohemica Barrande.

Paterula Barrande, Système Sil. du Centre de la Bohéme, 5, 1879, p. 110.—Zittel, Handb. Pal., 1, 1880, p. 667.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pp. 78, 165; 11th Ann. Rep. New York State Geologist, 1894, p. 242.—Schuchert, Zittel-Eastman Textb. Pal., 1913, p. 372.

Paterula amii Schuchert.

Paterula species Hall and Clarke, 8, pt. 1, p. 78, pl. 4K, fig. 1.

Paterula amii Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 301.—Ruedemann, Bull. New York State Mus., 42, 1901, p. 569, pl. 1, fig. 2.

Ordovician: South of St. Johns Market, Quebec, Canada; Mount Moreno, near Hudson, New York (Normanskill).

PATTERSONIA Miller. Genotype: P. difficilis Miller.
Pattersonia Miller, Jour. Cincinnati Soc. Nat. Hist., 5, 1882, p. 43.—James, J. F., ibid., 9, 1886, pp. 246, 247; 14, 1891, pp. 68, 69.—Miller, N. A. Geol. Pal., 1889, p. 163.—Rauff, Palæontographica, 40, 1894, p. 267.
Strobilospongia Beecher, Mem. Peabody Mus., Yale University, 2, 1889, p. 14. (Genotype: S. tuberosa Beecher.)
Chirospongia Miller, N. A. Geol. Pal., 1889, p. 156.—J. F. James, Jour. Cincinnati Soc. Nat. Hist., 14, 1891, p. 65. (Genotype: C. wenti Miller.)

Pattersonia aurita (Beecher).
Strobilospongia aurita Beecher, Mem. Peabody Mus., Yale Univ., 2, 1889, p. 28, pl. 5, fig. 1.
Pattersonia aurita Miller, N. A. Geol. Pal., 1889, p. 163 (gen. ref.).—Rauff, Palæontographica, 40, 1894, p. 271.
Chirospongia wenti Miller, N. A. Geol. Pal., 1889, p. 157, fig. 98.
Trenton (Bigby): Benson Creek, Franklin County, Kentucky.

Pattersonia difficilis Miller.
Pattersonia difficilis Miller, Jour. Cincinnati Soc. Nat. Hist., 5, 1882, p. 43, pl. 2, figs. 3, 3a.—James, J. F., ibid., 9, 1886, p. 247; 14, 1891, p. 69.—Miller, N. A. Geol. Pal., 1889, p. 163, fig. 118.—Rauff, Palæontographica, 40, 1894, p. 268, pl. 6, figs. 17-20.
Maysville (Corryville): Cincinnati, Ohio.
Plesiotype.—Cat. No. 46565, U.S.N.M.

Pattersonia tuberosa (Beecher).
Strobilospongia tuberosa Beecher, Mem. Peabody Mus., Yale Univ., 2, 1889, p. 26, pl. 5, fig. 5; pl. 6, 3-7.
Pattersonia tuberosa Miller, N. A. Geol. Pal., 1889, p. 163 (gen. ref.).—James, J. F., Jour. Cincinnati Soc. Nat. Hist., 14, pt. 1, 1891, p. 69.—Rauff, Palæontographica, 40, 1894, p. 269, fig. 51.
Maysville (Bellevue): Turners Station, Kentucky.

Pattersonia ulrichi Rauff.
Pattersonia Ulrichi Rauff, Palæontographica, 40, 1894, p. 271, pl. 6, figs. 21-25.
Maysville (Corryville): Cincinnati, Ohio.
Holotype.—Cat. No. 46566, U.S.N.M.

PELAGIELLA Matthew. Genotype: Cyrtolites atlantoides Matthew.
Pelagiella Matthew, Trans. New York Acad. Sci., 14, 1895, p. 131.—Miller, N. A. Geol. Pal., 2d App., 1897, p. 769.

Pelagiella hoyti (Walcott).
Platyceras hoyti Walcott, Proc. U. S. Nat. Mus., 13, 1890, p. 268, pl. 20, fig. 8.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 668, fig.
Pelagiella hoyti Walcott, Smiths. Misc. Coll., 57, 1912, p. 266, pl. 41, fig. 17.
Upper Cambrian or Ozarkian (Hoyt): Near Saratoga Springs, New York.
Holotype.—Cat. No. 23846, U.S.N.M.

Pelagiella minutissima (Walcott).
Platyceras minutissimum Walcott, 32d Rep. New York State Mus. Nat. Hist., 1879, p. 129.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 671, figs.
Pelagiella minutissima Walcott, Smiths. Misc. Coll., 57, 1912, p. 266, pl. 41, figs. 15, 16.
Upper Cambrian or Ozarkian (Hoyt): Near Saratoga Springs, New York.
Plesiotypes.—Cat. Nos. 58551, 58552, U.S.N.M.

PELTURA Milne-Edwards. Genotype: Entomostracites scarabæoides Wahlenberg.

Peltura Milne-Edwards, Hist. Nat. Crust., 3, 1840, p. 344.—Hawle and Corda, Abh. d. k. bohmischen Gesell. d. Wiss., 5, 1847, (extract), pp. 119, 127, pl. 6, fig. 68.—Angelin, Pal. Scandinavica, 3d ed., Holmiae, 1854, p. 44.—Barrande, Neues Jahrb. f. Min., etc., 1850, p. 779.—Pictet, Traite de Pal., 2d ed., 2, 1854, p. 492.—Brogger, Die sil. Etagen 2–3, Kristiania, 1882, p. 105, 106.—Zittel, Handb. Pal., 2, Munich, 1885, p. 595.—Koken, Die Leitfossilien, Leipzig, 1896, p. 19, fig. 11; figs. 3, 4, 8.—Moberg and Moller, Geol. Foren. Stockholm, Forhandl. 20, 1898, p. 229.—Lindstrom, Kongl. Sven. Vet.-Akad. Handl., 34, 1901, pp. 27, 29.—Raymond, Zittel-Eastman Textb. Pal., 1913, p. 715.

Anthes Goldfuss, Neues Jahrb. f. Min., etc., 1843, p. 544.—Emmrich, Neues Jahrb. f. Min., etc., 1845, p. 43. (Genotype: E. scarabæoides Wahlenberg).

Peltura scarabæoides (Wahlenberg).

Entomostracites scarabæoides Wahlenberg, Petr. Tell. Suec., 1821, p. 41, pl. 1, fig. 2.

Olenus scarabæoides Dalman, K. Vet.-Akad. Handl., 1827, p. 257; Uber die Pal., 1828, p. 57.—Burmeister, Org. Tril., London, 1846, p. 71.—Mackie, The Geol., 2, 1859, p. 426, fig. 14.—Salter, Mem. Geol. Surv. Great Britain, 2, 1866, pt. 1; ibid., 3, 2d ed., 1881, p. 494, pl. 5, figs. 2–5.

Peltura scarabæoides Pictet, Traite de Pal., 2d ed., 2, p. 492, pl. 44, fig. 7.—Angelin, Pal. Scand., 3d ed., Holmiae, 1878, p. 45, pl. 25, fig. 8.—Linnarsson, Geol. For. Stockholm Forhandl., 5, 1880, p. 134; Afh. Sveriges Geol. Unders., ser. C, No. 43, 1880, p. 4, pl. 1, figs. 1–5.—Brogger, Die sil. Etagen 2–3, Kristiania, 1882, p. 107, pl. 2, figs. 9, 12 (bibliography cited).—Pompeckj, Beit. Phys.-Oekon. Gesell., Konigsberg, 1890, p. 89, pl. 4, fig. 28.—Matthew, Trans. Royal Soc. Canada, 9, sec. 4, 1892, p. 53, pl. 13, figs. 9a, b.—Koken, Die Leitfossilien, Leipzig, 1896, p. 18, figs. 3, 4, 8, 11.—Lindstrom, Kongl. Sven. Vet.-Akad. Handl., 34, No. 8, 1901, p. 64, pl. 3, fig. 42.—Matthew, Geol. Surv. Canada, Rep. Cambrian Rocks Cape Breton, 1903, p. 230.

Olenus (Peltura) scarabæoides Roemer, Leth. geog., 1, Leth. Pal. Atlas, 1876, pl. 1, fig. 5.

Lower Ordovician: Europe; McNeil Brook, Cape Breton, Nova Scotia (Bretonian—Div. C 3b).

Pendulocrinus Salter. See Calceocrinus Hall.

Penniretepora D'Orbigny. See Glauconome Goldfuss.

Pentacrinites hamptoni Emmons. Not recognized.

Pentacrinites hamptoni Emmons, Geol. New York, 2, 1842, p. 402, fig. 3.—Vanuxem, Nat. Hist. New York Geol., 3, 1842, pp. 64, 65, fig. 3.—Owen, Amer. Jour. Sci. Arts, 47, 1844, p. 376, fig. 3.

Lorraine: New York.

Observation.—Merely a crinoid plate.

PENTAMERELLA Hall. Genotype: Atrypa arata Conrad.

Pentamerella Hall, 20th Rep. New York State Cab. Nat. Hist., 1867, p. 163; Pal. New York, 4, 1867, pp. 373, 375.—Zittel, Handb. Pal., 1, p. 694.—Nettelroth, Kentucky Fossil Shells, Mem. Kentucky Geol. Surv., 1889, p. 49.—Miller, N. A. Geol. Pal., p. 360.—Hall and Clarke, Pal. New York, 8, pt. 2, 1893, p. 245; 13th Ann. Rep. New York State Geol., 1895, p. 845.—Koken, Die Leitfossilien, Leipzig, p. 244.

Pentamerella(?) compressa Ringueberg.
Pentamerella compressa Ringueberg, Bull. Buffalo Soc. Nat. Sci., 5, 1886, p. 15, pl. 2, fig. 4.—Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 302.
Clinton (Rochester): Lockport, New York.
Observation.—May be a pathologic or compressed specimen of Spirifer crispus or S. sulcatus (Schuchert).

PENTAMEROCERAS Hyatt. Genotype: Gomphoceras mirum Barrande.
Pentamorion Barrande, Sil. Syst. Boheme, 2, 1867, p. 265.
Pentameroceras Hyatt, Proc. Boston Soc. Nat. Hist., 22, 1883, p. 278.—Foord, Cat. Foss. Ceph. British Mus., 1, 1888, p. 245.—Newell, Proc. Boston Soc. Nat. Hist., 23, 1888, p. 483.

Pentameroceras mirum (Barrande).
Gomphoceras mirum Barrande, Syst. Sil. Boheme, 2, 1867, p. 319, pls. 82 and 91.
Pentameroceras mirum Newell, Proc. Boston Soc. Nat. Hist., 1888, p. 483.
Silurian: Bohemia; (?)Delphi, Indiana.

PENTAMERUS Sowerby. Genotype: P. lævis Sowerby.
Pentamerus Sowerby, Mineral Conch., 1, 1813, p. 76.—Pictet, Traite de Pal., 2d ed., 4, 1857, p. 52.—Chapman, Canadian Jour., n. s., 3, 1858, p. 162; 7, 1862, p. 115; Expos. Min. and Geol. Canada, 1864, p. 118.—Zittel, Handb. Pal., 1, 1880, p. 693.—Miller, N. A. Geol. Pal., 1889, p. 361.—Hall and Clarke, Pal. New York, 8, pt. 2, 1895, p. 236.—Koken, Die Leitfossilien, Leipzig, 1896, p. 244.—Hall and Clarke, 13th Ann. Rep. New York State Geol., 1895, p. 844.—Grabau, Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 190; Bull. New York State Mus., 45, 1901, p. 190.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 275.—Schuchert, Zittel-Eastman Textb. Pal., 1900, p. 321; 2d. ed., 1913, p. 395.

PENTAMERUS ARCUOSUS McChesney. See Clorinda arcuosa.

PENTAMERUS BARRANDI Billings. See Virgiana barrandei.

PENTAMERUS BEAUMONTI Castelnau. See Pentamerus oblongus.

PENTAMERUS BISINUATUS McChesney. See Pentamerus oblongus bisinuatus.

PENTAMERUS BREVIROSTRIS Hall. See Anastrophia brevirostris.

Pentamerus circularis Weller.
Pentamerus circularis Weller, Geol. Surv. New Jersey, Pal. 3, 1903, p. 233, pl. 20, figs. 17–19.
Helderbergian (Decker Ferry): Two miles south of Tristates, New York.

PENTAMERUS CHICAGOENSIS Winchell and Marcy. See Clorinda ventricosa.

PENTAMERUS COLLETTI Miller. See Conchidium colletti.

PENTAMERUS COMPLANATUS Nettelroth. See Conchidium tenuicostatum.

PENTAMERUS CONCHIDIUM Emerson. See Conchidium biloculare.

PENTAMERUS COPPINGERI Etheridge. See Gypidula coppingeri.

PENTAMERUS CRASSORADIUS McChesney. See Conchidium crassoradius.

PENTAMERUS DECUSSATUS Whiteaves. See Conchidium decussatum.

Pentamerus divergens Foerste.

Pentamerus divergens Foerste, Cincinnati Soc. Nat. Hist. Jour., 21, 1909, p. 28, pl. 1, figs. 5A-E; pl. 2, figs. 17A, B.

Cayugan (Kokomo): Kokomo, Indiana.

PENTAMERUS FORNICATUS Hall. See Clorinda fornicata.

PENTAMERUS GALEATUS Roemer. See Gypidula roemeri.

PENTAMERUS GALEATUS Hall. See Gypidula (Sieberella) galeata.

PENTAMERUS GALEATUS Hall and Whitfield. See Gypidula nucleus.

PENTAMERUS GLOBULOSUS Nettelroth. See Gypidula globulosa.

PENTAMERUS HEMIPLICATUS Hall. See Parastrophia hemiplicata.

PENTAMERUS INTERPLICATUS Hall. See Anastrophia interplicata.

PENTAMERUS KNAPPI Hall and Whitfield. See Conchidium knappi.

PENTAMERUS KNIGHTI Nettelroth. See Conchidium nettelrothi.

PENTAMERUS KNOTTI Nettelroth. See Gypidula knotti.

PENTAMERUS LAQUEATUS Conrad. See Conchidium laqueatum.

PENTAMERUS LITTONI Hall. See Conchidium littoni.

PENTAMERUS MULTICOSTATUS Hall. See Conchidium multicostatum.

PENTAMERUS NOBILIS Emmons. See Conchidium laqueatum.

PENTAMERUS NUCLEUS Hall and Whitfield. See Gypidula nucleus.

PENTAMERUS NYSIUS Hall. See Conchidium nysius.

PENTAMERUS NYSIUS var. CRASSICOSTA Hall and Whitfield. See Conchidium nysius.

PENTAMERUS NYSIUS var. TENUICOSTA Hall and Whitfield. See Conchidium tenuicostatum.

PENTAMERUS NYSIUS var. TENUISCOSTATUS Nettelroth. See Conchidium nysius.

Pentamerus oblongus Sowerby.

Pentamerus oblongus Sowerby, Murchison's Sil. Syst., 1839, p. 641, pl. 19, fig. 10.—Hall, Geol. New York Rep. 4th Dist., 1843, p. 70, figs. 1-5.—Owen, Geol. Expl. Iowa, Wisconsin, and Illinois, 1844, pl. 14, fig. 10; Amer. Jour. Sci. Arts, 48, 1845, p. 304, figs. 1-5.—Hall, ibid., 2d ser., 20, 1849, p. 227; Pal. New York, 2, 1852, p. 79, pl. 25, fig. 1.—Marcou, Geol. Map United States and British Prov., etc., 1853, p. 27, pl. 2, fig. 3.—Billings, Canadian Nat. Geol., 1, 1856, p. 58, pl. 1, figs. 2, 3; Geol. Canada, 1863, p. 316, fig. 326.—Chapman, Canadian Jour., n. s., 7, 1862, p. 115, figs. 107, 107a; ibid., 8, 1863, p. 210, fig. 213; Expos. Min. and Geol. Canada, 1864, p. 118, figs. 107, 107a; p. 182, fig. 213.—Davidson, Mon. British Sil. Brach., Pal. Soc., 1867, p. 151, pl. 18, figs. 1-12; pl. 19, figs. 1, 2.—Billings, Geol. Mag., 5, 1868, pl. 4, fig. 3.—Hall and Whitfield, 24th Rep. New York State Cab. Nat. Hist., 1872, p. 183; Geol. Surv. Ohio Pal., 2, 1875, p. 137, pl. 7, fig. 9.—Whitfield, Geol. Wisconsin, 4, 1882, p. 288, pl. 17, figs. 4-9.—Chamberlin, Geol. Wisconsin, 1, 1883, p. 192.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 617, figs.—Nettelroth, Kentucky Fossil Shells, Mem. Kentucky Geol. Surv., 1889, p. 60, pl. 33, figs. 15-17.—Hall and Clarke, Pal. New York, 8, pt. 2, 1895, p. 237,

Pentamerus oblongus—Continued.

figs. 169-171; pl. 67, fig. 20; pl. 68, figs. 1-5; pl. 69, figs. 1, 4-7, 13, 14; pl. 70, figs. 1-4.—Whiteaves, Pal. Foss. Geol. Surv. Canada, 3, pt. 2, 1895, p. 63.—Grabau, Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 190, fig. 103; Bull. New York State Mus., 45, 1901, p. 190, fig. 103.—Foerste, Bull. Kentucky Geol. Surv., 7, 1906, p. 323, pl. 1, fig. 2.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 275, fig. 344.

Pentamerus beaumonti Castelnau, Essai Syst. Sil. l'Amer. Septent., 1843, p. 38, pl. 13, fig. 9.

Niagaran: England; New York (Walcott); Ohio (Dayton and Springfield); Indiana; Kentucky (Louisville); Illinois; Wisconsin; Iowa; Ontario; Anticosti, etc.

Plesiotypes.—Cat. No. 51310, U.S.N.M. (Nettelroth).

Pentamerus oblongus bisinuatus (McChesney).

Pentamerus bisinuatus McChesney, New Pal. Foss., Extr. No. 2, 1861, p. 85; Illus. New Species Foss., 1865, pl. 9, figs. 1a-b.—Whitfield, Geol. Wisconsin, 4, 1882, p. 290, pl. 17, fig. 3.

Pentamerus oblongus var. bisinuatus Hall, Pal. New York, 8, pt. 2, fasc. 2, 1893, pp. 238 and 239.—Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 2, 1895, p. 64.

Niagaran: Milwaukee, Cato, and Wauwatosa, Wisconsin (Racine, Waukesha); Durham, Ontario (Guelph).

Pentamerus oblongus compressus Kindle and Breger.

Pentamerus oblongus var. compressa Kindle and Breger, 28th Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1904, p. 437, pl. 7, figs. 1-5.

Niagaran: Delphi, Indiana.

Pentamerus oblongus corrugatus Weller and Davidson.

Pentamerus oblongus var. corrugatus Weller and Davidson, Jour. Geol., 4, 1896, p. 171, pl. 7, figs. 1-4.

Niagaran: Jones County, Iowa.

Pentamerus oblongus cylindricus Hall and Whitfield.

Pentamerus oblongus var. cylindrica Hall and Whitfield, 24th Rep. New York State Cab. Nat. Hist., 1872, p. 183; 27th Rep., ibid., 1875, pl. 10, figs. 13, 14.—Nettelroth, Kentucky Fossil Shells, Mem. Kentucky Geol. Surv., 1889, p. 61, pl. 30, figs. 2-4.—Hall and Clarke, Pal. New York, 8, pt. 2, 1893, p. 237, fig. 172; pl. 68, figs. 7, 8; pl. 69, figs. 11, 12.—Kindle and Breger, 28th Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1904, p. 436, pl. 6, figs. 6-10; pl. 7, fig. 6.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 276.

Niagaran: Louisville, Kentucky (Louisville); Delphi, Indiana.

Plesiotype.—Cat. No. 51311, U.S.N.M.

Pentamerus oblongus maquoketa Hall and Clarke.

Pentamerus oblongus (partim) Whitfield, Geol. Wisconsin, 4, 1882, pp. 288, 291, pl. 17, figs. 8, 9.

Pentamerus oblongus var. maquoketa Hall and Clarke, Pal. New York, 8, pt. 2, 1893, p. 239, pl. 67, figs. 11-13; 48th Rep. New York State Mus., 2, for 1895, 1897, p. 368, pl. 11, figs. 12-14; 14th Rep. State Geol. New York for 1894, 1897, p. 368, pl. 11, figs. 12-14.

Niagaran: Ashford, Wisconsin; near Dubuque and Hopkinton, Iowa.

Pentamerus oblongus subrectus Hall and Clarke.
Pentamerus oblongus var. subrectus Hall and Clarke, Pal. New York, 8, pt. 2, 1893, pp. 238, 239, pl. 68, figs. 2, 3, 8–10; pl. 70, fig. 5; 48th Rep. New York State Mus., 2, for 1895, 1897, p. 368, pl. 12, figs. 1–6; 14th Rep. State Geol. New York for 1894, 1897, p. 368, pl. 12, figs. 1–6.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 275.
Niagaran: Earlville, Iowa.

PENTAMERUS OCCIDENTALIS Hall. See Conchidium occidentale.

Pentamerus ovalis Hall.
Pentamerus ovalis Hall, Pal. New York, 2, 1852, p. 103, pl. 31, fig. 1.—Foerste Proc. Boston Soc. Nat. Hist., 24, 1890, p. 324, pl. 5, figs. 17, 18.
Clinton: New Hartford, Oneida County, New York; Cumberland Gap, Tennessee; Collinsville, Alabama.

Pentamerus parvulus Savage.
Pentamerus parvulus Savage, Bull. Geol. Surv. Illinois, 23, 1913, p. 78, pl. 5, figs. 18–21.
Upper Medinan (Edgewood—Noix): Near Louisiana and Clarksville, Missouri; Hamburg, Illinois.

Pentamerus pergibbosus Hall and Whitfield.
Pentamerus pergibbosus Hall and Whitfield, Pal. Ohio, 2, 1875, p. 139, pl. 7, figs. 10, 11.—Nettelroth, Kentucky Fossil Shells, Mem. Kentucky Geol. Surv., 1889, p. 162.—Hall and Clarke, Pal. New York, 8, pt. 2, 1893, p. 239, pl. 67, figs. 10, 14–19.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 618, figs.
Niagaran: Greenfield, Ohio; Louisville, Kentucky; Wisconsin.
Plesiotype.—Cat. No. 51355, U.S.N.M.

Pentamerus pesovis Whitfield.
Pentamerus pesovis Whitfield, Ann. New York Acad. Sci., 2, 1882, p. 195; 5, 1891, p. 513, pl. 5, figs. 11–22; Geol. Ohio, 7, 1895, p. 414, pl. 1, figs. 18–22.—Sherzer, Michigan Geol. Surv., 7, pt. 1, 1900, p. 224, pl. 17, figs. 18–22.—Grabau, Michigan Geol. Surv., Geol., 1st ser., 1909, p. 127, pl. 30, figs. 18–22.
Lower Monroan (Greenfield?): Adams County, Ohio.

PENTAMERUS REVERSUS Billings. See Parastrophia reversa.

PENTAMERUS SIMILIOR Hall. See Spirifer? similior.

PENTAMERUS TRISINUATUS McChesney. See Meristina trisinuata.

PENTAMERUS UNIPLICATUS Nettelroth. See Gypidula uniplicata.

PENTAMERUS VENTRICOSA Hall. See Clorinda ventricosa.

PENTAMORION Barrande. See Pentameroceras Hyatt.

PENTATREMATITES REINWARDTII Roemer. See Troostocrinus reinwardti.

PENTREMITES REINWARDTII Troost. See Troostocrinus reinwardti.

PENTREMITES SUBCYLINDRICA Hall and Whitfield. See Troostocrinus subcylindrica.

PERIECHOCRINITES Austin. See Periechocrinus Austin.

PERIECHOCRINUS Austin. Genotype: Actinocrinus moniliformis J. S. Miller.
Periechocrinites Austin, Ann. Mag. Nat. Hist., 10, 1842, p. 109; ibid., 11, 1843, p. 203.

PERIECHOCRINUS—Continued.

Geocrinus D'Orbigny, Prodr. de Pal., 1, 1849, p. 46. (Genotype: Actinocrinites moniliformis Phillips.)

Periechocrinus McCoy, Syn. British Pal. Foss., 1855, p. 56.—Pictet, Traite de Pal., 2d ed., 4, 1857, p. 323.—Dujardin and Hupe, Hist. Natur. des Zooph. Echin., 1862, p. 137.—Salter, Cat. Camb. Sil. Foss., 1873, p. 121.—Angelin, Icon. Crinoid., 1878, p. 6.—Zittel, Handb. Pal., 1, 1879, p. 369.—Wachsmuth and Springer, Proc. Acad. Nat. Sci. Philadelphia, 1881, p. 270, 301 (Rev. Pal., pt. 2, pp. 96, 127); 1886, p. 328.—Keyes, Missouri Geol. Surv., 4, for 1894, 1895, p. 154.—Wachsmuth and Springer, Mem. Mus. Comp. Zool., Harvard, 20, 1897, p. 519.—Bather, Treatise on Zool., pt. 3, Echinoderma, London, 1900, pp. 166, 168.—Weller, Chicago Acad. Sci., Nat. Hist. Surv. Bull. 4, pt. 1, 1900, p. 36, fig. 24; p. 129, text fig. 49.—Wachsmuth, Zittel-Eastman Textb. Pal., 1, 1900, p. 144.—Zittel, Grundzuge Pal., 1, 1910, p. 158.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 536.—Springer, Zittel-Eastman Textb. Pal., 2d ed., 1913, p. 194.

Trochocrinites Portlock, Geol. Londonderry, 1848, p. 345.

Saccocrinus Hall, Pal. New York, 2, 1852, p. 205.—Pictet, Traite de Pal., 2d ed., 4, 1857, p. 323.—Roemer, Sil. Fauna West. Tennessee, Breslau, 1860, p. 44.—Meek and Worthen, Geol. Surv. Illinois, 3, 1868, p. 347; Proc. Acad. Nat. Sci. Philadelphia, 1869, p. 165; Geol. Surv. Illinois, 5, 1873, p. 394; also p. 395.—Hall, 28th Rep. New York State Mus. Nat. Hist., 1879, rev. ed., p. 127.—Zittel, Handb. Pal., 1, 1879, p. 369.—Miller, Jour. Cincinnati Soc. Nat. Hist., 4, 1881, pp. 166, 167; N. A. Geol. Pal., 1889, p. 278.—Springer, Zittel-Eastman Textb. Pal., 1, 1913, p. 194. (Genotype: S. speciosus Hall.)

Crumenæcrinites Troost, Amer. Jour. Sci. Arts, 2d ser., 8, 1849, p. 420 (nom. nud.).

PERIECHOCRINUS CHICAGOENSIS Weller. See Habrocrinus benedicti.

PERIECHOCRINUS CHRISTYI Hall. See Periechocrinus whitfieldi.

Periechocrinus dubius Wood.

Actinocrinites tennesseeae (part) Troost, MS., 1850.

Gilbertsocrinites(?) dubius Troost, MS., 1850.

Saccocrinus speciosus Roemer (not Hall, 1852), Sil. Fauna West. Tennessee, 1860, p. 42, pl. 3, figs. 3a–c.

Periechocrinus speciosus (part) Wachsmuth and Springer, Mem. Mus. Comp. Zool., Harvard, 20, 1897, p. 521.

Periechocrinus dubius Wood, Bull. U. S. Nat. Mus., 64, 1909, p. 77.

Niagaran (Brownsport): Perry and Decatur Counties, Tennessee.

Cotypes.—Cat. No. 39967, U.S.N.M.

Periechocrinus egani (Miller).

Saccocrinus egani Miller, Jour. Cincinnati Soc. Nat. Hist., 4, 1881, p. 173, pl. 4, figs. 4, 4a.

Periechocrinus egani Wachsmuth and Springer, Proc. Acad. Nat. Sci. Philadelphia, 1885, p. 328 (Rev. Pal., pt. 3, sec. 1, p. 106).—Weller, Bull. Chicago Acad. Sci., Nat. Hist. Surv., 4, pt. 1, 1900, pp. 130, 136, pl. 13, fig. 9.

Niagaran (Racine): Cicero and Bridgeport, Illinois.

Periechocrinus gorbyi (Miller).

Saccocrinus gorbyi Miller, 17th Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1892, p. 667, pl. 9, fig. 2, 3 (adv. sheets, 1891, p. 57).

Niagaran (Brownsport): Adams, Decatur County, Tennessee.

PERIECHOCRINUS HOWARDI Wachsmuth and Springer. See Habrocrinus howardi.

hocrinus infelix (Winchell and Marcy).

egistocrinus infelix Winchell and Marcy, Mem. Boston Soc. Nat. Hist., 1, 1865, p. 110, pl. 2, fig. 7.

ccocrinus infelix Meek and Worthen, Geol. Surv. Illinois, 2, 1866, p. 210, footnote (gen. ref.).—Miller, Jour. Cincinnati Soc. Nat. Hist., 4, 1881, p. 260, pl. 6, figs. 2, 2a, 2b.

ccocrinus (Megistocrinus) inflexus Meek and Worthen, Geol. Surv. Illinois, 3, 1868, p. 349.

riechocrinus infelix Wachsmuth and Springer, Mem. Mus. Comp. Zool., Harvard (N. A. Crin. Cam.), 21, 1897, p. 525, pl. 50, fig. 2a–d.—Weller, Bull. Chicago Acad. Sci., Nat. Hist. Surv., 4, pt. 1, 1900, p. 134, pl. 13, figs. 1, 2.

iagaran (Racine): Bridgeport and Romeo, Illinois.

hocrinus marcouanus (Winchell and Marcy).

egistocrinus Marcouanus Winchell and Marcy, Mem. Boston Soc. Nat. Hist., 1, 1865, p. 87, fig., pl. 2, fig. 5.

accocrinus Marcouanus Meek and Worthen, Geol. Surv. Illinois, 2, 1866, p. 210, footnote (gen. ref.).—Miller, Jour. Cincinnati Soc. Nat. Hist., 4, 1881, p. 167, pl. 4, figs. 1, 1a.

eriechocrinus marcouanus Wachsmuth and Springer, Mem. Mus. Comp. Zool., Harvard, 21, 1897, p. 523, pl. 50, figs. 7a–b; pl. 51, fig. 5.—Weller, Bull. Chicago Acad. Sci., Nat. Hist. Surv., 4, pt. 1, 1900, pp. 130, 131, pl. 12, figs. 2–4.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 536.

Niagaran (Racine): Bridgeport, Lemont, and Joliet, Illinois.

echocrinus necis (Winchell and Marcy).

Megistocrinus necis Winchell and Marcy, Mem. Boston Soc. Nat. Hist., 1, 1865, p. 110, pl. 2, fig. 6.

Saccocrinus necis Miller, Jour. Cincinnati Soc. Nat. Hist., 4, 1881, p. 172, pl. 4, figs. 3, 3a.

Periechocrinus necis Wachsmuth and Springer, Proc. Acad. Nat. Sci. Philadelphia, 1885, p. 328 (Rev. Pal., pt. 3, sec. 1, p. 106); Mem. Mus. Comp. Zool., Harvard (N. A. Crin. Cam.), 21, 1897, p. 524, pl. 50, fig. 1, a, b.—Weller, Bull. Chicago Acad. Sci., Nat. Hist. Surv., 4, pt. 1, 1900, pp. 130, 133, pl. 13, figs. 5, 6.

Niagaran (Racine): Bridgeport, Hawthorne, and Cicero, Illinois.

echocrinus ornatus (Hall and Whitfield).

Saccocrinus ornatus Hall and Whitfield, Geol. Surv. Ohio, Pal., 2, 1875, p. 126, pl. 6, figs. 7–9.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 917, figs.

Periechocrinus ornatus Wachsmuth and Springer, Proc. Acad. Nat. Sci. Philadelphia, 1881, p. 306 (Rev. Pal., pt. 2, p. 132); Mem. Mus. Comp. Zool., Harvard, 21, 1897, p. 527, pl. 50, figs. 3a, b; pl. 51, fig. 7.

Periechocrinus (Saccocrinus) ornatus Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 537, fig. 1865.

Habrocrinus ornatus Wachsmuth and Springer, Proc. Acad. Nat. Sci. Philadelphia, 1890, p. 368.—Slocom, Field Columbian Mus., Geol., 2d ser., 1908, p. 296.

Niagaran: Yellow Springs, Ohio; St. Paul, Indiana (Laurel).

ECHOCRINUS SEMIRADIATUS Wachsmuth and Springer. See Macrostylocrinus miradiatus.

ECHOCRINUS SPECIOSUS Wachsmuth and Springer (part). See Periechocrinus bius.

Periechocrinus speciosus (Hall).

Saccocrinus speciosus Hall, Pal. New York, 2, 1852, p. 205, pl. 46, figs. 1a–n, 2.

Actinocrinus (Saccocrinus) speciosus Hall, Trans. Albany Inst., 4, 1864, p. 197.

Periechocrinus speciosus Wachsmuth and Springer, Proc. Acad. Nat. Sci. Philadelphia, 1881, p. 307 (Rev. Pal., pt. 2, p. 133); Mem. Mus. Comp. Zool., Harvard, 21, 1897, p. 521, pl. 50, fig. 6.

Niagaran (Lockport): Lockport, New York.

Periechocrinus tennesseensis (Hall).

Crumenæcrinites ovalis Troost, Proc. Amer. Assoc. Adv. Sci., 2, 1850, p. 62 (nom. nud.).

Actinocrinites tennesseeæ (part) Troost MS.

Saccocrinus tennesseensis Hall and Whitfield, Geol. Surv. Ohio, Pal., 2, 1875, p. 125, pl. 6, fig. 10.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 917, fig.

Periechocrinus tennesseensis Wachsmuth and Springer, Mem. Mus. Comp. Zool., Harvard, 21, 1897, p. 528, pl. 1, fig. 4.—Foerste, Jour. Geol., 11, 1903, p. 712.—Wood, Bull. U. S. Nat. Mus., 64, 1909, p. 76, pl. 6, fig. 10.

Periechocrinus (Saccocrinus) tennesseensis Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 537, fig. 1865.

Niagaran: Perry and Decatur Counties, Tennessee (Brownsport); Yellow Springs, Ohio.

Plesiotypes.—Cat. Nos. 39915 and 39916, U.S.N.M. (Troost's types of C. ovalis and A. tennesseeae.)

Periechocrinus umbrosus (Miller and Gurley).

Saccocrinus umbrosus Miller and Gurley, Bull. 6, Illinois State Mus. Nat. Hist., 1895, p. 24, pl. 2, figs. 13, 14.

Niagaran (Laurel?): St. Paul, Indiana.

Periechocrinus urniformis (Miller).

Saccocrinus urniformis Miller, Jour. Cincinnati Soc. Nat. Hist., 4, 1881, p. 170, pl. 4, figs. 2, 2a.

Periechocrinus urniformis Wachsmuth and Springer, Proc. Acad. Nat. Sci. Philadelphia, 1885, p. 328 (Rev. Pal., pt. 3, sec. 1, p. 106); Mem. Mus. Comp. Zool. Harvard, 21, 1897, p. 526, pl. 50, figs. 5a, b.—Weller, Bull. Chicago Acad. Sci. Nat. Hist. Surv., 4, pt. 1, 1900, pp. 130, 135, pl. 12, fig. 1; pl. 13, figs. 3, 4.

Saccocrinus pyriformis Miller, Jour. Cincinnati Soc. Nat. Hist., 5, 1882, p. 81, pl. 3, figs. 3, 3a.

Periechocrinus pyriformis Wachsmuth and Springer, Proc. Acad. Nat. Sci. Philadelphia, 1885, p. 328 (Rev. Pal., pt. 3, sec. 1, p. 106).

Niagaran (Racine): Bridgeport and Cicero, Illinois.

Periechocrinus whitfieldi (Hall).

Actinocrinus Christyi Hall (not Shumard, 1855), Trans. Albany Inst., 4, 1863, p. 196.

Megistocrinus christyi Winchell and Marcy, Mem. Boston Soc. Nat. Hist., 1, 1865, p. 89.

Saccocrinus Christyi Meek and Worthen, Geol. Surv. Illinois, 3, 1868, p. 347, pl. 5, fig. 1.—Hall, 28th Rep. New York State Mus. Nat. Hist., doc. ed., 1877, pl. 13, figs. 12–20; mus. ed., 1879, p. 127, pl. 13, figs. 12–20; 11th Ann. Rep. Indiana Dep. Geol. Nat. Hist., 1882, p. 254, pl. 12, figs. 12–20; pl. 15, figs. 3, 4.—Miller, N. A. Geol. Pal., 1889, p. 278, fig. 422.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 915, figs.

Periechocrinus christyi Wachsmuth and Springer, Proc. Acad. Nat. Sci. Philadelphia, 1881, p. 305 (Rev. Pal., pt. 2, p. 132).—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 536.

eriechocrinus whitfieldi—Continued.

Actinocrinus (Saccocrinus) Whitfieldi Hall, 20th Rep. New York State Cab. Nat. Hist. (extras, 1865), 1868, pp. 326, 391; rev. ed., 1870, pp. 370, 430.

Actinocrinus Whitfieldi Shumard, Trans. Acad. Sci. St. Louis, 2, 1866, p. 350.

Periechocrinus whitfieldi Wachsmuth and Springer, Mem. Mus. Comp. Zool. Harvard, 21, 1897, p. 522, pl. 51, figs. 1–4.

Actinocrinus waldronensis Shumard, Trans. Acad. Sci. St. Louis, 2, 1866, pp. 343, 350, footnote. (Proposed in place of A. christyi, 1863. Canceled in note, p. 350.)

Saccocrinus sacculus Meek and Worthen, Geol. Surv. Illinois, 3, 1868, p. 349. (Proposed in case Chicago specimens should be different.)

Niagaran: Waldron, Indiana, and Newsom, Tennessee (Waldron); Chicago, Illinois (Racine).

PERIGLYPTOCRINUS Wachsmuth and Springer.

Genotype: P. billingsi Wachsmuth and Springer.

Periglyptocrinus Wachsmuth and Springer, Mem. Mus. Comp. Zool. Harvard, 20, 1897, p. 277.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 552.—Springer, Zittel-Eastman Textb. Pal., 2d ed., 1913, p. 190.

Periglyptocrinus billingsi Wachsmuth and Springer.

Periglyptocrinus Billingsi Wachsmuth and Springer, Mem. Mus. Comp. Zool. Harvard, 20, 1897, p. 277, pl. 21, fig. 1a, b.—Springer, Geol. Surv. Canada, Mem. 15P, 1911, p. 11 (loc. occ.).

Glyptocrinus billingsi Miller, 2d App., N. A. Geol. Pal., 1897, p. 746.

Trenton (Curdsville): Ottawa and Kirkfield, Ontario.

Periglyptocrinus priscus (Billings).

Glyptocrinus priscus Billings, Geol. Surv. Canada, Rep. Progr. 1853–1856, 1857, p. 257; Geol. Surv. Canada, dec. 4, 1859, p. 56, pl. 7, figs. 1a–1f.—Miller, Jour. Cincinnati Soc. Nat. Hist., 6, 1883, p. 225.

Ptychocrinus priscus Wachsmuth and Springer, Proc. Acad. Nat. Sci. Philadelphia, 1886, p. 301. (Rev. Pal., pt. 3, p. 225.)

Periglyptocrinus priscus Wachsmuth and Springer, Mem. Mus. Comp. Zool. Harvard, 20, 1897, p. 278, pl. 21, fig. 2.—Parks, Ottawa Naturalist, 23, 1909, pp. 153–155, pl. 3.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 552.—Springer, Geol. Surv. Canada, Mem. 15P, 1911, p. 11 (loc. occ.).

Trenton (Curdsville): Renfrew County, Kirkfield, and Balsam Lake, Ontario.

PERIPLOMA PLANULATA D'Orbigny. See Clidophorus planulatus.

PERONOPORA (part) Nicholson. See Atactoporella Ulrich and Monticulipora D'Orbigny.

PERONOPORA Nicholson. Genotype: Monticulipora frondosa Nicholson (not D'Orbigny)=Chætetes decipiens Rominger.

Peronopora Nicholson, Genus Monticulipora, 1881, pp. 102, 215.—Ulrich, Jour. Cincinnati Soc. Nat. Hist., 5, 1882, p. 153.—Roemer, Leth. geog., pt. 1, Leth. Pal., 1883, p. 472.—Waagen and Wentzel, Pal. Indica, 13th Ser., 1886, p. 875.—Ulrich, Geol. Surv. Illinois, 8, 1890, p. 370.—Zittel's Textb. Pal. (Engl. ed.), 1896, p. 104.—Ulrich, ibid., p. 272.—Miller, N. A. Geol. Pal., 2d App., 1897, p. 729.—Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 29.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 752.—Bassler, Zittel-Eastman Textb. Pal., 1913, p. 332.

Peronopora compressa (Ulrich).
Chætetes compressus Ulrich, Jour. Cincinnati Soc. Nat. Hist., 2, 1879, p. 27, pl. 7, figs. 25–25b.
Peronopora compressa Ulrich, ibid., 5, 1882, p. 244.—Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 344.
Monticulipora compressa J. F. James, Jour. Cincinnati Soc. Nat. Hist., 18, 1894, p. 75.
Peronopora uniformis Ulrich, ibid., 5, 1882, p. 244, pl. 10, figs. 8, 8a.
Monticulipora uniformis J. F. James, ibid., 18, 1895, p. 76.
Maysville (McMillan): Cincinnati, Ohio, and vicinity.
Cotypes.—Cat. No. 43694, U.S.N.M.

Peronopora decipiens (Rominger).
Chætetes decipiens Rominger, Proc. Acad. Nat. Sci. Philadelphia, 1866, p. 116.
Peronopora decipiens Ulrich, Jour. Cincinnati Soc. Nat. Hist., 5, 1882, p. 244.—Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 344.—Cumings, Amer. Geol., 29, 1902, pl. 12, fig. 3.
Chætetes frondosus Nicholson (not D'Orbigny), Quart. Jour. Geol. Soc. London, 30, 1874, p. 508, pl. 30, figs. 2-2b; Pal. Ohio, 2, 1875, p. 208, pl. 22, figs. 1-1b; Ann. Mag. Nat. Hist., 4th ser., 18, 1876, p. 91, pl. 5, figs. 11, 11a.—Quenstedt, Roehren- und Sternkorallen, 1881, p. 73, pl. 146, figs. 3–5 (not 8).
Monticulipora (Peronopora) frondosa Nicholson, Genus Monticulipora, 1881, p. 216, figs. 46, 47, pl. 4, 4a, 5, 5a.—James and James, Jour. Cincinnati Soc. Nat. Hist., 11, 1888, p. 17.—James, ibid., 18, 1895, p. 72.
Ptilodictya pavonia Boule and Thevenin, Ann. de Pal., 1, fasc. 1, 1906, p. 5, pl. 2, figs. 2–4.
Peronopora pavonia Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 866, pl. 22, figs. 1–1c; pl. 31, figs. 4, 4a.
Maysville and Richmond: Madison and other localities in Indiana; Ohio; Kentucky; Tennessee; Illinois.

Observation.—Boule and Thevenin in refiguring D'Orbigny's so-called types of Ptilodictya pavonia have paid no attention to D'Orbigny's original description which clearly refers to an Escharopora, or to Edwards and Haime's work.

Peronopora milleri Nickles.
Peronopora milleri Nickles, Bull. Kentucky Geol. Surv., No. 5, 1905, p. 43, pl. 1, fig. 6.
Trenton (Cynthiana): Lexington, etc., Kentucky.

PERONOPORA PAVONIA Cumings. See Peronopora decipiens.

PERONOPORA UNIFORMIS Ulrich. See Peronopora compressa.

Peronopora vera Ulrich.
Peronopora vera Ulrich, Amer. Geol., 2, 1888, p. 40.—Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 345.—Nickles, Bull. Kentucky Geol. Surv., No. 5, 1905, p. 46, pl. 2, fig. 1.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 867, pl. 22, figs. 2–2b; pl. 31, fig. 5.
Eden and Maysville (Fairview): Cincinnati, Ohio, and vicinity.
Cotypes.—Cat. No. 43943, U.S.N.M.

PERONOPORELLA Cumings and Galloway. See Homotrypella Ulrich.

PERONOSPORITES Smith. Genotype: P. antiquarius Smith.
Peronosporites Smith, Gardeners' Chronicle, n. s., 8, 1877, p. 499.

Peronosporites globosus Loomis.
Peronosporites globosus Loomis, Bull. New York State Mus., 39, 1900, p. 225, pl. 16, fig. 4.
Clinton (Wolcott): Rochester, New York.

Peronosporites minutus Loomis.
Peronosporites minutus Loomis, Bull. New York State Mus., 39, 1900, p. 225, pl. 16, figs. 5, 6.
Clinton (Wolcott): Rochester, New York.

Peronosporites ramosus Loomis.
Peronosporites ramosus Loomis, Bull. New York State Mus., 39, 1900, p. 225, pl. 16, fig. 1-3.
Clinton (Wolcott): Rochester, New York.

PETALICHNUS Miller. Genotype: P. multipartitus Miller.
Petalichnus Miller, Jour. Cincinnati Soc. Nat. Hist., 2, 1880, pp. 221, 222; N. A. Geol. Pal., 1889, p. 452.

Petalichnus multipartitus Miller.
Petalichnus multipartitus Miller, Jour. Cincinnati Soc. Nat. Hist., 2, 1880, p. 222, pl. 14, fig. 2.
Eden (Economy): Walker Mill Road, Cincinnati, Ohio.

PETALOCRINUS Weller and Davidson. Genotyp r. mirabilis Weller and Davidson.
Petalocrinus Weller and Davidson, Jour Geol., 4, 1896, p. 167.—Weller, Jour. Geol., 6, 1898, p. 700.—Bather, G l. Mag., dec. 4, 5, 1898, p. 284.—Weller, Bull. Chicago Acad. Sci., Nat ist. Surv., 4, pt. 1, 1900, p. 20.—Bather, Treatise on Zool., pt. 3, Echi derma, London, 1900, p. 175, fig. 91.—Springer, Zittel-Eastman Textb. P , 2d ed., 1913, p. 216.

Petalocrinus inferior Bath r.
Petalocrinus inferior B her, Quart. Jour. Geol. Soc. London, 1899, pp. 54, 426, pl. 26, fig. 57; fig. 1
Niagaran: Near Mo ticello, Jones County, Iowa.

Petalocrinus longus Bather.
Petalocrinus lo gus Bather, Quart. Jour. Geol. Soc. London, 1898, pp. 54, 431, pl. 26, figs. 58 65; figs. 11, 12, p. 432.
Niagaran (Lau rel): St. Paul, Indiana.

Petalocrinus(?) major Weller and Davidson.
Petalocrinu (?) major Weller and Davidson, Jour. Geol., 4, 1896, p. 170, pl. 6, fig. 1.
Niagaran: Jones County, Iowa.

Petalocrin s mirabilis Weller and Davidson.
Pet crinus mirabilis Weller and Davidson, Jour. Geol., 4, 1896, p. 167, figs. 1, 2, pl. 6, figs. 2-5.—Weller, Bull. Chicago Acad. Sci., Nat. Hist. Surv., 4, pt. 1, 1900, p. 19, fig. 4.—Bather, Treatise on Zool., pt. 3, Echinoderma, London, 1900, p. 175, fig. 91.
Ni garan: Jones County, Iowa.

PETI GOPORA Ulrich. Genotype: P. gregaria Ulrich.
P tigopora Ulrich, Jour. Cincinnati Soc. Nat. Hist., 5, 1882, p. 155; Contr. Micro-Pal. Cambro-Sil., pt. 2, 1889, p. 34.—Miller, N. A. Geol. Pal., 1889, p. 314.—Ulrich, Geol. Surv. Illinois, 8, 1890, p. 372; Zittel's Textb. Pal. (Engl. ed.), 1896, p. 274.—Simpson, 14th Ann. Rep. State Geol. New York for 1894, 1897,

PETIGOPORA—Continued.

p. 563.—Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 31.—Ulrich and Bassler, Smiths. Misc. Coll., Quart., 47, 1904, pp. 24, 32.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 752.

Petigopora asperula Ulrich.

Petigopora asperula Ulrich, Jour. Cincinnati Soc. Nat. Hist., 6, 1883, p. 157, pl. 6, figs. 4–4c; 14th Ann. Rep. Geol. Nat. Hist. Sur. Minnesota, 1886, p. 130.—Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 345.—Cumings, 32d Ann. Rep. Dept. Geol. Nat. Res. Indiana, 1908, p. 868, pl. 22, figs. 3–3c.

Monticulipora wetherbyi var. asperula James and James, Jour. Cincinnati Soc. Nat. Hist., 11, 1888, p. 24.

Monticulipora asperula J. F. James, ibid., 18, 1895, p. 81.

Petigopora gregaria (part) Simpson, 14th Ann. Rep. State Geol. New York for 1894, 1897, fig. 129 (part) (p. 564).

Maysville (Bellevue): Cincinnati, Ohio, and vicinity.

Cotypes.—Cat. No. 43699, U.S.N.M.

Petigopora gregaria Ulrich.

pora gregaria Ulrich, Jour. Cincinnati Soc. Nat. Hist., 6, 1883, p. 155, pl. 7,
State —J. F. James, ibid., 18, 1896, p. 124.—Simpson, 14th Ann. Rep.
32d Ann. Rep. York for 1894, 1897, fig. 129 (part) (p. 564).—Cumings,
Maysville (Fairmount— Nat. Res. Indiana, 1908, p. 869, pl. 22, figs. 4, 4c.
Cotypes.—Cat. No. 43700, U.S.): Cincinnati, Ohio, and vicinity.

PETIGOPORA GREGARIA (part) Simpson.
Petigopora asperula.

Petigopora offula Ulrich and Bassler.

Petigopora offula Ulrich and Bassler, Smiths.
Richmond (Arnheim): Middletown, Lebanon, e Coll., Quart., 47, 1904, p. 32.
Cotypes.—Cat. No. 43194, U.S.N.M. hio.

Petigopora petechialis (Nicholson).

Chætetes petechialis Nicholson, Pal. Ohio, 2, 1875, p. 2
Petigopora petechialis Ulrich, Jour. Cincinnati Soc. Nat. 22, figs. 5, 5a.
14th Ann. Rep. Geol. Nat. Hist. Sur. Minnesota, 1886, t., 6, 1883, p. 156;
Geol. Pal., 1889, fig. 496 (p. 314).—Cumings, 32d Ann. 103.—Miller, N. A.
Res. Indiana, 1908, p. 870, pl. 22, figs. 5, 5a. , Dep. Geol. Nat.
Monticulipora petechialis James and James, Jour. Cincinnati
1888, p. 24.—J. F. James, ibid., 18, 1895, p. 85. Nat. Hist., 11,
Maysville: Cincinnati, Ohio, and vicinity.

Petigopora scabiosa Ulrich.

Petigopora scabiosa Ulrich, Contr. Micro-Pal. Cambro Sil., pt. 2, 34.—
Whiteaves, Pal. Foss., 3, 1897, p. 116.
Richmond (Stony Mountain): Stony Mountain, Manitoba.

PETIGURUS Raymond. Genotype: Bathyurus nero lings.

Petigurus Raymond, Bull. Victoria Mem. Mus., 1, 1913, p. 58.

Petigurus cybele (Billings).

Bathyurus Cybele Billings, Canadian Nat. Geol., 4, 1859, p. 366, fig. 12c
Canada, Geol. Surv. Canada, 1863, p. 122, fig. 43; Pal. Foss., 1, Ge
Canada, 1865, p. 353, fig. 341c.

Petigurus cybele Raymond, Bull. Victoria Mem. Mus., 1, 1913, p. 59.

Petigurus cybele—Continued.
Canadian: Mingan Islands, Beauharnois, and counties of Leeds and Grenville, Canada; Orwell, Vermont, and Comstocks Landing, New York (Beekmantown).

Petigurus? ellipticus (Cleland).
Bathyurus ellipticus Cleland, Bull. Amer. Pal., 3, 1900, p. 129 (257), pl. 16, figs. 5, 6; ibid., 4, 1903, p. 11, pl. 3, fig. 3.
Canadian (Little Falls): Near Fort Hunter, New York.

Petigurus nero (Billings).
Bathyurus Nero Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 260, fig. 243a–d.
Petigurus nero Raymond, Bull. Victoria Memorial Mus., 1, 1913, p. 59, pl. 7, fig. 8.
Canadian (Quebec—F-N): Keppel Island, Pistolet Bay, Table Head, etc., Newfoundland.

PETRAIA Zittel. See Streptelasma Hall.

PETRAIA CALICULA Hall. See Enterolasma caliculum.

PETRAIA CANADENSIS Billings. See Streptelasma rusticum.

PETRAIA FANNINGANA Safford. See Ditœcholasma fanningana.

PETRAIA MINGANENSIS Billings. See Archæoscyphia minganensis.

PETRAIA OTTAWAENSIS Billings. See Streptelasma corniculum.

PETRAIA PULCHELLA Billings. See Streptelasma selectum.

PETRAIA PYGMÆA var. OCCIDENTALIS Whiteaves. See Streptelasma occidentale.

PETRAIA WAYNENSIS Safford. See Enterolasma waynense.

PETRASTER Billings. Genotype: Palæasterina rigidus Billings.
Petraster Billings, Geol. Surv. Canada, dec. 3, 1858, p. 79.—Chapman, Canadian Jour., n. s., 6, 1861, p. 517; Expos. Min. and Geol. Canada, 1864, p. 111.—Hall, 20th Rep. New York State Cab. Hist., 1868, p. 294; rev. ed. 1870, p. 337.—Nicholson and Etheridge, Mon. Sil. Foss. Girvan Dist., 1880, p. 322.—Miller, N. A. Geol. Pal., 1889, p. 269.—James, Jour. Cincinnati Soc. Nat. Hist., 18, 1895, pp. 126, 134.—Schuchert, Bull. U. S. Nat. Mus., 88, 1915, p. 138.
Palæaster (part) Zittel, Handb. Pal., 1, 1879, p. 452.

Petraster? americanus (D'Orbigny).
Fossil Asterias Graham, Anthony and James, Amer. Jour. Sci. Arts, 2d ser., 1, 1846, p. 441, fig.
Cœlaster americanus D'Orbigny, Prod. de Pal., 1, 1849, p. 22.
Asterias anthonii Dana, Manual Geol., 1st ed., 1863, p. 221, fig.
Palasterina jamesi Dana, Amer. Jour. Sci., 2d ser., 25, 1863, p. 295; Manual Geol., 2d ed., 1864, p. 221, fig.
Palæaster jamesi Hall, 20th Rep. New York State Cab. Nat. Hist., 1868, footnote, p. 284; rev. ed. 1870, p. 329.—Meek, Geol. Surv. Ohio Pal., 1, 1873, p. 62, pl. 4, fig. 4.—James, Jour. Cincinnati Soc. Nat. Hist., 18, 1895, p. 127.
Palæaster (Palæasterina?) jamesi Lesley, Geol. Surv. Pennsylvania, Rep., P 4, 1889, p. 577, fig.
Petraster(?) americanus Schuchert, in Frech, Foss. Cat., 1, Anim., pt. 3, 1914, p. 32; Bull. U. S. Nat. Mus., 88, 1915, p. 146, pl. 26, fig. 2.
Maysville (Fairmount): Cincinnati, Ohio.

PETRASTER(?) ANTIQUA Shumard. See Palæaster antiquus.

PETRASTER BELLULUS Billings. See Mesopalæaster bellulus.

PETRASTER JAMESI Schuchert. See Petraster americanus.

Petraster rigidus (Billings).

Palæasterina rigidus Billings, Geol. Surv. Canada, Rep. Progr. for 1853–1856, 1857, p. 291.

Petraster rigidus Billings, Geol. Surv. Canada, dec. 3, 1858, p. 80, pl. 10, fig. 3a.—Wright, Mon. British Foss. Echinod., Oolitic, 2, pt. 1, 1862 (Pal. Soc. for 1861), p. 29.—Hall, 20th Rep. New York State Cab. Nat. Hist., 1868, p. 294; rev. ed., 1870, p. 337.—James, Jour. Cincinnati Soc. Nat. Hist., 18, 1895, p. 134.—Springer, Geol. Surv. Canada, Mem., 15P, 1911, p. 46 (loc. occ.).—Schuchert, in Frech, Foss. Cat., 1, Anim., 1914, p. 32; Bull. U. S. Nat. Mus., 88, 1915, p. 141, pl. 27, fig. 5.

Trenton (Curdsville): Ottawa and Kirkfield, Ontario.

PETRASTER RIGIDUS Billings (part). See Hudsonaster matutinus.

Petraster speciosus (Miller and Dyer).

Palæasterina speciosa Miller and Dyer, Jour. Cincinnati Soc. Nat. Hist., 1, 1878, p. 30, pl. 1, fig. 7.—Miller, N. A. Geol. Pal., 1889, p. 266, fig. 381.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 731, pl. 3, fig. 8.

Petraster speciosus Schuchert in Frech, Foss. Cat., 1, Anim., pt. 3, 1914, p. 33; Bull. U. S. Nat. Mus., 88, 1915, p. 142, pl. 23, fig. 5–7; pl. 26, fig. 1; pl. 27, figs. 1–4.

Palæasterina approximata Miller and Dyer, Jour. Cincinnati Soc. Nat. Hist., 1, 1878, p. 30, pl. 1, fig. 8.

Richmond: Near Winchester, Ohio, and Richmond, Indiana.

PETRASTER WILBERANUS Meek and Worthen. See Mesopalæaster wilberanus.

PETROCRANIA Raymond. Genotype: Craniella meduanensis Œhlert.

Craniella Œhlert (not Schmidt, 1870), Bull. Soc. Études Scientif. d'Angers, 1888, p. 37.—Hall and Clarke, Pal. New York, 7, pt. 1, 1892, pp. 153, 170.—Miller, N. A. Geol. Pal., 1st App., 1892, p. 687.—Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 374.—Hall and Clarke, 11th Ann. Rep. New York State Geol., 1894, p. 262.—Huene, Verh. d. Russ.-Kais. Mineral. Ges. zu St. Petersb., 2d ser., 36, 1899, pp. 297, 315; Neues Jahrb. Min. Geol. Pal., 1, 1899, p. 147.—Grabau, Bull. Buffalo Soc. Nat. Sci., 6, 1899, p. 186.—Schuchert, Zittel-Eastman Textb. Pal., 1, 1900, p. 311.

Petrocrania Raymond, Ann. Carnegie Mus., 7, 1911, p. 229.—Schuchert, Zittel-Eastman Textb. Pal., 1913, p. 378.

Petrocrania? clintonensis (Foerste).

Craniella? clintonensis Foerste, Geol. Ohio, 7, 1895, p. 565, pl. 37, figs. 3a, 3b.

Upper Medinan (Brassfield): Todds Fork, Ohio.

Petrocrania prona Raymond.

Crania prona Raymond, Ann Carnegie Mus., 3, 1906, p. 594; 7, 1911, p. 229, pl. 34, figs. 26–31.

Chazyan: Valcour Island and Chazy (Valcour), New York.

Petrocrania ulrichi (Hall and Clarke).

Craniella ulrichi Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pp. 153, 181, pl. 4, figs. 1, 2; 48th Rep. New York State Mus., 2, for 1895, 1897, p. 336, pl. 3, figs. 15, 16; 14th Rep. State Geol. New York for 1894, 1897, p. 336, pl. 3, figs. 15, 16.—Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 375, pl. 29, figs. 38, 39.

etrocrania ulrichi—Continued.

Petrocrania ulrichi Raymond, Ann. Carnegie Mus., 7, 1911, p. 230 (gen. ref.).

Crania halli Sardeson, Bull. Minnesota Acad. Nat. Sci., 3, 1892, p. 328, pl. 4, figs. 8–10.

Black River (Decorah) and Trenton (Prosser): Minneapolis, St. Paul, Fountain, etc., Minnesota.

HACELOPORA Ulrich. Genotype: P. pertenuis Ulrich.

Phacelopora Ulrich, Geol. Surv. Illinois, 8, 1890, p. 368.—(Ulrich, in press), Miller, N. A. Geol. Pal., 1889, p. 314.—Pocta, Syst. Sil. Centre Boheme, 8, pt. 1, 1894, p. 16.—Simpson, 14th Ann. Rep. State Geol. New York for 1894, 1897, p. 600.—Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 22.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 121.

hacelopora constricta Ulrich.

Phacelopora constricta Ulrich, Geol. Surv. Illinois, 8, 1890, p. 406, pl. 29, fig. 2.—Simpson, 14th Ann. Rep. State Geol. New York for 1894, 1897, fig. 209 (p. 600).—Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 346.

Trenton: Burgin, Kentucky.

Observation.—Now regarded as the interior cast of some undetermined species of Helopora or Arthroclema.

Holotype.—Cat. No. 43271, U.S.N.M.

Phacelopora pertenuis Ulrich.

Phacelopora pertenuis Ulrich, Geol. Surv. Illinois, 8, 1890, p. 406, pl. 29, figs. 1–1c.—Keyes, Missouri Geol. Surv., 5, 1894, p. 13, pl. 33, fig. 3.—Simpson, 14th Ann. Rep. State Geol. New York for 1894, 1897, figs. 207, 208 (p. 600).—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 121, fig. 178i.

Upper Medinan (Girardeau): Thebes, Illinois.

Richmond (English Head): Island of Anticosti.

Cotypes.—Cat. No. 43272, U.S.N.M.

PHACOPIDELLA Reed. Genotype: Phacops glockeri Barrande.

Acaste Goldfuss (not Leach, 1811), Neues Jahrb. Min., etc., 1843, pp. 541, 563.—Salter, Mem. Geol. Surv. U. King., dec. 7, 1853, pl. 1; Mon. British Tril., Pal. Soc., 1864, p. 14.—Schmidt, Mem. l'Acad. Imp. Sci. St. Petersb., 7th ser., 30, 1881, pp. 61, 67.—Zittel, Handb. Pal., 2, 1885, p. 614.—Vogdes, Cal. Acad. Sci., Occ. Papers, 4, 1893, p. 333.—Koken, Die Leitfossilien, Leipzig, 1896, p. 32.—Beecher, Amer. Jour. Sci., 4th ser., 3, 1897, p. 105, pl. 3, fig. 32.—Lindstrom, Kongl. Sven. Vet.-Akad. Handl., 34, No. 8, 1901, p. 27.

Phacopidella Reed, Geol. Mag., n. s., dec. 5, 2, 1905, p. 173.—Raymond, Zittel-Eastman Textb. Pal., 1913, p. 726.

Phacopidella downingiæ (Murchison).

Phacops downingiæ Murchison, Silurian System, 2d ed., 1839, pl. 18, fig. 5.—Salter, Mon. British, Tril., 1862, pl. 2, figs. 17–25.

Silurian: England; Arisaig, Nova Scotia.

Phacopidella orestes (Billings).

Phacops Orestes Billings, Canadian Nat. Geol., 5, 1860, p. 65, fig. 10; Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 61 (loc. occ.).

Acaste orestes Schuchert and Twenhofel, Bull. Geol. Soc. Amer., 21, 1890, p. 710.

Anticostian (Gun River, Jupiter River): East Point, etc., Anticosti.

PHACOPS Emmrich. Genotype: P. latifrons Bronn.

Phacops Emmrich, Neues Jahrb. Min., etc., 1845, p. 38.—Hawle and Corda, Abh. d. k. bohmischen Gesel. d. Wiss., 1 (extract), 1847, p. 96, pl. 5, fig. 57.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 214.—Pictet, Traité de Pal., 2d ed.,

PHACOPS—Continued.

2, 1854, p. 499.—Salter, Cat. Camb. and Sil. Foss., 1873, p. 51.—Angelin, Pal. Scandinavica, 3d ed., Holmiae, 1878, p. 8.—Salter, Mon. British Tril., Pal. Soc., 1864, p. 14.—Schmidt, Mem. l'Acad. Imp. Sci. St. Petersburg, 7th ser., 30, 1881, pp. 61, 66.—Zittel, Handb. Pal., 2, 1885, p. 614.—Hall and Clarke, Pal. New York, 7, 1888, p. xxvii, fig., p. xxix.—Miller, N. A. Geol. Pal., 1889, p. 560.—Whidborne, Mon. Dev. Fauna South England, 1, Pal. Soc., 1889, p. 2.—Miller, N. A. Geol. Pal., 1st, App., 1892, p. 710.—Koken, Die Leitfossilien, Leipzig, 1896, p. 31, fig. 21, figs. 3, 4.—Beecher, Amer. Jour. Sci., 4th ser., 3, 1897, p. 105, pl. 3, fig. 33.—Grabau, Bull. Buffalo Soc. Nat. Sci., 6, 1899, p. 313.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 321.—Raymond, Zittel-Eastman Textb. Pal., 1913, p. 726.

PHACOPS CALLICEPHALUS Hall. See Pterygometopus callicephalus.

Phacops handwerki Weller.

Phacops handwerki Weller, Bull. Chicago Acad. Sci., Nat. Hist. Surv., 4, pt. 2, 1907, p. 271, pl. 24, figs. 6, 7.

Niagaran (Racine): Near Lemont, Illinois.

PHACOPS LIMULURUS Hall. See Dalmanites limulurus.

PHACOPS ORESTES Billings. See Phacopidella orestes.

Phacops pulchellus Foerste.

Arionellus ——— Foerste, Bull. Sci. Lab. Denison Univ., 1, 1885, p. 114, pl. 14, fig. 3.

Phacops pulchellus Foerste, ibid., 2, 1887, p. 99, pl. 8, figs. 4, 20, 21; Proc. Bost. Soc. Nat. Hist., 24, 1890, p. 268, pl. 6, figs. 20–21.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 322.

Phacops trisulcatus Foerste, Geol. Surv. Ohio, 7, 1893, p. 529, pl. 26, fig. 3; pl. 27, figs. 4, 20, 21; pl. 31, figs. 20, 21.

Phacops cf. pulchellus Kindle, 28th Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1904, p. 484, pl. 24, figs. 9, 12.

Upper Medinan (Brassfield): Dayton, Ohio; Cumberland Gap, Tennessee.

Niagaran: Connor's Mill, Georgetown and Pendleton, Indiana.

PHACOPS STOKESII Dawson. See Proetus stokesi.

Phacops trisulcatus (Hall).

Calymene? trisulcata Hall, Geol. New York, pt. 4, 1843, p. 74, fig. 9, p. 72; tab. org. rem. 8, fig. 9.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 110, fig.

Phacops triculcatus Hall, Pal. New York, 2, 1852, p. 300, pl. 66, figs. 3a–b.

Clinton (Williamson): Rochester, etc., New York.

PHACOPS TRISULCATUS Foerste. See Phacops pulchellus.

PHÆNOPORA (Hall). Genotype: P. explanata Hall.

Phænopora Hall, Pal. New York, 2, 1852, p. 46; Amer. Jour. Sci. Arts, 2d ser., 11, 1851, p. 399.—Pictet, Traité de Pal., 2d ed., 4, 1857, p. 169.—Ulrich, Jour Cincinnati Soc. Nat. Hist., 5, 1882, p. 152.—Foerste, Bull. Sci. Lab. Denison Univ., 2, 1887, p. 157.—Miller, N. A. Geol. Pal., 1889, p. 314.—Ulrich, Geol. Surv. Illinois, 8, 1890, p. 392; Geol. Minnesota, 3, 1893, p. 173.—Pocta, Syst. Sil. Centre Boheme, 8, pt. 1, 1894, p. 8.—Ulrich, Zittel's Textb. Pal. (Engl. ed.), 1896, p. 279.—Simpson, 14th Ann. Rep. State Geol. New York for 1894,

ÆNOPORA—Continued.
1897, p. 541.—Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 46.—Hennig, Archiv. fur Zool., K. Sven. Vet. Akad., Stockholm, 2, No. 10, 1905, p. 10.—Bassler, Bull. U. S. Geol. Surv., 292, 1906, p. 55; Bull. U. S. Nat. Mus., 77, 1911, p. 118; Zittel-Eastman Textb. Pal., 1913, p. 345.

ænopora constellata Hall.
Phænopora constellata Hall. Pal. New York, 2, 1852, p. 47, pl. 18, figs. 7a–e.—Miller, N. A. Geol. Pal., 1889, fig. 497 (p. 314).—Ulrich, Geol. Sur. Illinois, 8, 1890, fig. 12a, b (p. 392).—Newland and Hartnagel, Bull. New York State Mus., 123, 1908, pl. 3.
Early Silurian: Wayne County, New York (Clinton); Hamilton, etc., Ontario (Cataract).

hænopora ensiformis Hall.
Phænopora ensiformis Hall, Pal. New York, 2, 1852, p. 48, pl. 18, figs. 8a–c.—Nicholson and Hinde, Canadian Jour., n. s., 14, 1874, p. 142.—Nicholson, Pal. Province Ontario, 1875, p. 45, fig. 19, 2, 2a.—Foerste, Geol. Surv. Ohio, 7, 1895, p. 598.—Bassler, Bull. U. S. Geol. Surv., 292, 1906, p. 55, pl. 27, figs. 8, 9; Bull. U. S. Nat. Mus., 77, 1911, p. 118, fig. 45.
Ptilodictya ensiformis Ulrich, Jour. Cincinnati Soc. Nat. Hist., 5, 1882, p. 172.
Silurian: Flamborough, Dundas, Hamilton, etc., Ontario (Cataract); New York and Ontario (Rochester); Indiana (Osgood); Ohio (Brassfield); Anticosti (Ellis Bay, Becsie River); Gotland (Borkholm drift).
Plesiotype.—Cat. No. 35752, U.S.N.M.

hænopora excellens (Billings).
Ptilodictya excellens Billings, Catal. Sil. Foss. Anticosti, 1866, p. 34.
Stictoporella? excellens Ulrich, Jour. Cincinnati Soc. Nat. Hist., 5, 1882, p. 169.
Phænopora excellens Miller, N. A. Geol. Pal., 1889, p. 314.
Gamachian (Ellis Bay) and Anticostian (Gun River): East Point, Gamache Bay, etc., Anticosti.

Phænopora expansa Hall and Whitfield.
Eschara bipunctata Van Cleve (MS.), 1853.
Ptilodictya bipunctata Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 825, figs.—Hall, 12th Ann. Rep. Indiana Geol. Nat. Hist., 1883, p. 266, pl. 13, fig. 5.
Phænopora (Ptilodictya) expansa Hall and Whitfield, Pal. Ohio, 2, 1875, p. 114, pl. 5, fig. 1.
Ptilodictya expansa (part) Hall, 12th Ann. Rep. Indiana Geol. Nat. Hist., 1883, p. 266.
Phænopora expansa Ulrich, Geol. Surv. Illinois, 8, 1890, fig. 12c, p. 392.—Foerste, Geol. Surv. Ohio, 7, 1895, p. 598, pl. 29, fig. 1.—Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 347.—Bassler, Proc. U. S. Nat. Mus., 30, 1906, p. 46.
Phænopora platyphylla Foerste, Bull. Sci. Lab. Denison Univ., 2, 1887, p. 157; ibid., 3, 1888, pl. 16, fig. 1.—Weller, Geol. Surv. New Jersey, Pal. 3, 1903, pl. 19, figs. 5–7.
Ptilodictya platyphylla James, Paleontologist, No. 3, 1879, p. 21.
Upper Medinan (Brassfield): Dayton, and Clinton County, Ohio.

Phænopora explanata Hall.
Phænopora explanata Hall, Pal. New York, 2, 1852, p. 46, pl. 18, figs. 6a–e.
Upper Medinan (Cataract): Flamborough Head and Hamilton, Ontario.

PHÆNOPORA? FENESTELLIFORMIS Ulrich. See Pachydictya fenestelliformis.

Phænopora fimbriata (James).

Eschara ramosa Van Cleve (MS.), 1853.

Ptilodictya fimbriata James, Paleontologist, No. 1, 1878, p. 8.

Phænopora fimbriata Foerste, Bull. Sci. Lab. Denison Univ., 2, 1887, p. 161; ibid., 3, 1888, pl. 15, fig. 7; Proc. Boston Soc. Nat. Hist., 24, 1889, p. 330; Geol. Surv. Ohio, 7, 1895, p. 599, pl. 28, fig. 7.—Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 348.—Bassler, U. S. Geol. Surv., No. 292, 1906, pl. 21, fig. 20; Proc. U. S. Nat. Mus., 30, 1906, p. 47, pl. 7, figs. 11, 12.

Stictopora vanclevii Hall, 12th Ann. Rep. Indiana Geol. Nat. Hist., 1883, p. 268, pl. 13, figs. 1, 2.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1071, figs.

Upper Medinan (Brassfield): Clinton County, Belfast and Dayton, Ohio.

Phænopora fimbriata canadensis Bassler.

Phænopora fimbriata var. canadensis Bassler, Bull. U. S. Geol. Surv., 292, 1906, p. 55, pl. 21, figs. 17–19.

Clinton (Rochester): Lockport and Clinton, New York; Grimsby, Ontario.

Holotype.—Cat. No. 35753, U.S.N.M.

Phænopora incipiens Ulrich.

Phænopora incipiens Ulrich, Geol. Minnesota, 3, 1893, p. 174, pl. 13, figs. 14–17.

Trenton: Montreal, Quebec; Chimney Point, Vermont; St. Paul, Minnesota (Prosser).

Cotypes.—Cat. Nos. 43599, 43600, U.S.N.M.

Phænopora keewatinensis Whiteaves.

Phænopora Keewatinensis Whiteaves, Geol. Surv. Canada, Ann. Rep., n. s., 14, App. F, 1904, p. 40; Geol. Surv. Canada, Pal. Foss., 3, pt. 4, 1906, p. 268, pl. 24, figs. 6, 6a.

Niagaran: Sutton Mill Lake, Canada.

Phænopora magna (Hall and Whitfield).

Eschara compressa Van Cleve (MS.), 1853.

Stictopora magna Hall and Whitfield, Pal. Ohio, 2, 1875, p. 112, pl. 5, figs. 5, 6.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1067, figs.

Phænopora magna Foerste, Bull. Sci. Lab. Denison Univ., 2, 1887, p. 159; ibid., 3, 1888, pl. 15, fig. 6; pl. 16, fig. 2; Proc. Boston Soc. Nat. Hist., 24, 1889, p. 331; Geol. Surv. Ohio, 7, 1895, p. 599, pl. 28, fig. 6; pl. 29, figs. 2a–c.—Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 348.

Stictopora compressa Hall, 12th Ann. Rep. Indiana Geol. Nat. Hist., 1883, p. 267, pl. 14, fig. 3.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1064, fig.

Upper Medinan (Brassfield): Dayton and Belfast, Ohio.

Phænopora multifida (Hall).

Eschara multifida Van Cleve (MS.), 1853.

Ptilodictya sp.(?) James, Paleontologist, No. 1, 1878, p. 8. (Name P. Welshi suggested.)

Stictopora multifida Hall, 12th Ann. Rep. Indiana Geol. Nat. Hist., 1883, p. 268, pl. 14, fig. 4.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, p. 1068, fig.

Phænopora multifida Foerste, Bull. Sci. Lab. Denison Univ., 2, 1887, p. 160; ibid., 3, 1888, pl. 16, fig. 3; Geol. Surv. Ohio, 7, 1895, p. 599, pl. 29, fig. 3.

Ptilodictya welshi Bassler, Proc. U. S. Nat. Mus., 30, 1906, p. 52.

Upper Medinan (Brassfield): Dayton, and Clinton County, Ohio; Hanover, Indiana.

PHÆNOPORA MULTIPORA Hall. See Eurydictya multipora.

PHÆNOPORA PLATYPHYLLA Foerste. See Phænopora expansa.

Phænopora punctata (Nicholson and Hinde).
Ptilodictya? punctata Nicholson and Hinde, Canadian Jour., n. s., 14, 1874, p. 143, fig. 1a-b.—Nicholson, Pal. Province Ontario, 1874, p. 46, fig. 20.
Phænopora punctata Ulrich, Geol. Minnesota, 3, 1893, p. 174.
Upper Medinan (Cataract): Dundas, Ontario.

Phænopora superba (Billings).
Ptilodictya superba Billings, Catal. Sil. Foss. Anticosti, 1866, p. 35.
Phænopora superba Ulrich, Geol. Minnesota, 3, 1893, p. 174.
Anticostian (Becsie River, Gun River): Walls Cove and Becsie River Bay, Anticosti.

Phænopora wilmingtonensis Ulrich.
Phænopora wilmingtonensis Ulrich, Geol. Minnesota, 3, 1893, p. 175, pl. 13, figs. 22-26.
Richmond (Fernvale): Wilmington, Illinois.
Cotypes.—Cat. No. 43601, U.S.N.M.

PHANEROTREMA Fischer. Genotype: Pleurotomaria labiosa Hall.
Phanerotrema Fischer, Man. Conch., 1885, p. 851.—Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 952.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 638.

Phanerotrema occidens (Hall).
Pleurotomaria labrosa var. occidens Hall, 20th Rep. New York State Cab. Hist., 1868, p. 343 (extras, 1865).—Foerste, Proc. Boston Soc. Nat. Hist., 24, 1889, p. 289, pl. 5, fig. 14.
Pleurotomaria occidens Hall, 20th Rep. New York State Cab. Nat. Hist., 1867, p. 364, pl. 15, figs. 11, 12.—Hall and Whitfield, Geol. Surv. Ohio, Pal., 2, 1875, p. 142, pl. 8, fig. 2.—Whiteaves, Pal. Foss. Geol. Surv. Canada, 3, pt. 1, 1884, p. 23 (loc. occ.).—Koken, Neues Jahrb. Min. Geol. Pal., 6, Beilage-Band, 1889, p. 335.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 713, fig.—Whiteaves, Pal. Foss. Geol. Surv. Canada, 3, pt. 2, 1895, p. 77.
Phanerotrema occidens Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 952 (gen. ref.).—Whiteaves, Geol. Surv. Canada, Pal. Foss., 3, pt. 4, 1906, p. 296.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 638, fig. 866.
Niagaran: Racine, Wisconsin (Racine); Yellow Springs, Ohio; Elora, Saskatchewan River, etc., Canada (Guelph).

PHILHEDRA SCABIOSA Huene. See Crania scabiosa.

PHOLADOMORPHA Foerste. See Whiteavesia Ulrich.

PHOLIDOPS Hall. Genotype: Orbicula squamiformis Hall.
Pholidops Hall, Pal. New York, 3, 1859, p. 489; 13th Rep. New York State Cab. Nat. Hist., 1860, p. 92; 15th Rep., ibid., 1862, p. 195; Pal. New York, 4, 1867, pp. 31, 413.—Dall, Bull. Mus. Comp. Zool., 3, 1871, p. 27; Amer. Jour. Conch., 7, 1871, p. 72.—Miller, Cincinnati Quart. Jour. Sci., 2, 1875, p. 13; N. A. Geol. Pal., 1889, p. 362.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 155.—Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 376.—Hall and Clarke, 11th Rep. New York State Geol., 1894, p. 262.—Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 80.—Huene, Neues Jahrb. Min. Geol. Pal., 1, 1899, p. 144.—Grabau, Bull. Buffalo Soc. Nat. Sci., 6, 1899, p. 186.—Huene, Verh. Russ.-Kais. Mineral Ges. zu St. Petersburg, 36, 1899, p. 265; ibid.,

PHOLIDOPS—Continued.

38, 1900, p. 192.—Grabau, Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 179; Bull. New York State Mus., 45, 1901, p. 179.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 208.—Schuchert, Zittel-Eastman Textb. Pal., 1913, p. 379.

Craniops Hall, 12th Rep. New York State Cab. Nat. Hist., 1859, p. 84.—Œhlert, Fischer's Manuel de Conch., 1887, p. 1272.

Pholidops cincinnatiensis Hall.

Pholidops cincinnatiensis Hall, 24th Rep. New York State Cab. Nat. Hist., 1872, pl. 7, fig. 10; Pal. Ohio, 1, 1873, p. 130, pl. 5, fig. 2.—Miller, Cincinnati Quart. Jour. Sci., 2, 1875, p. 14; Jour. Cincinnati Soc. Nat. Hist., 1, 1878, p. 107.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 636, figs.—Miller, N. A. Geol. Pal., 1889, p. 362, fig. 597.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 157, pl. 41, fig. 18.—Crane, Geol. Mag., dec. 4, 2, 1895, pl. 5, fig. 19.

Eden and Maysville (Fairview): Cincinnati, Ohio, and vicinity.

Pholidops ovalis Hall.

Pholidops ovalis Hall, Trans. Albany Inst., 4, 1863, p. 209; Pal. New York, 4, 1867, pl. 3, figs. 1, 2; 28th Rep. New York State Mus. Nat. Hist., 1879, p. 149, pl. 21, figs. 1, 2; 11th Rep. State Geol. Indiana, 1882, p. 284, pl. 21, figs. 1, 2.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 637, figs.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 157, pl. 4I, fig. 20.—Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 307.

Niagaran: Waldron, Indiana, and Newsom, Tennessee (Waldron); Nova Scotia.

Pholidops ovata Hall.

Pholidops ovata Hall, Pal. New York, 3, 1859, p. 490, pl. 103B, figs. 7a–b.—Weller, Pal. New Jersey, 3, 1903, p. 226, pl. 20, figs. 27–29, p. 300.—Grabau, Michigan Geol. Surv., Geol. Ser., 1, 1909, p. 119, pl. 17, fig. 13.—Schuchert and Maynard, Maryland Geol. Surv., Low. Dev., 1913, p. 294, pl. 53, figs. 10–12.

Helderbergian: Albany County, New York (New Scotland); Keyser, West Virginia, and Tonoloway, Maryland (Keyser); New Jersey (Decker Ferry).

Lower Monroan (Raisin River): Monroe County, Michigan.

Pholidops squamiformis (Hall).

Orbicula? squamiformis Hall, Geol New York, Rep. 4th Dist., 1843, p. 108, fig. 1; Pal. New York, 2, 1852, p. 250, pl. 53, fig. 4.

Craniops squamiformis Hall, 12th Rep. New York State Cab. Nat. Hist. 1859, p. 84.

Pholidops squamiformis Hall, Pal. New York, 3, 1859, p. 490, pl. 103B, fig. 6.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 637, figs.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 156, pl. 4I, fig. 21.—Grabau, Bull. New York State Mus., 45, 1901, p. 179, fig. 82.—Grabau, Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 179, fig. 82.

Clinton (Rochester): Lockport, Rochester, etc., New York; Hamilton, etc., Ontario.

Pholidops subelliptica Savage.

Pholidops subelliptica Savage, Bull. Geol. Surv. Illinois, 23, 1913, p. 111, pl. 7, fig. 5.

Upper Medinan (Channahon): Will County, Illinois.

Pholidops subtruncata (Hall).

Orbicula? subtruncata Hall, Pal. New York, 1, 1847, p. 290, pl. 79, fig. 7.

Pholidops subtrunctata Hall, Desc. n. sp. of Crinoidea and other Fossils, 1866, p. 14; 24th Rep. New York State Cab. Nat. Hist., 1872, p. 221, pl. 7, fig. 9.—

holidops subtruncata—Continued.
Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pl. 41, fig. 19.—Foerste, Bull. Sci. Lab. Denison Univ., 17, 1914, p. 256.
Cincinnatian (Pulaski): Lorraine, Turin, etc., New York; Chambly, etc., Quebec.

holidops trentonensis Hall.
Pholidops trentonensis Hall, Desc. n. sp. of Crinoidea and other Fossils, 1866, p. 14; 24th Rep. New York State Cab. Nat. Hist., 1872, p. 221, pl. 7, fig. 8.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 157, pl. 41, fig. 17.—Ruedemann, Bull. New York State Mus., 49, 1902, p. 15.
Trenton: Middleville, etc., New York.

holidops trentonensis minor Winchell and Schuchert.
Pholidops trentonensis var. minor Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 376, pl. 29, fig. 40.
Trenton (Prosser): St. Paul and Cannon Falls, Minnesota.

holidops trombetana Clarke.
Pholidops trombetana Clarke, Archivos Mus. Nac. Rio de Janeiro, 10, author's Engl. ed., 1900, p. 8, pl. 1, figs. 7–11.
Silurian: Rio Trombetas, Brazil.

HOLIDOSTROPHIA Hall and Clarke.
Genotype: Strophodonta nacrea Hall=Chonetes (?) iowensis Owen.
Pholidostrophia Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 287; 11th Ann. Rep. New York State Geol., 1894, p. 281.—Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 308.

Pholidostrophia niagarensis Kindle and Breger.
Pholidostrophia niagarensis Kindle and Breger, 28th Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1904, p. 430, pt. 2, figs. 13–15.
Niagaran: Little Deer Creek, Carroll County, Indiana.

PHRAGMOCERAS Broderip. Genotype: P. arcuatum Sowerby.
Phragmoceras Broderip, Murchison's Sil. Syst., 1839, p. 621.—Portlock, Rep. Geol. Londonderry, 1843, p. 381.—McCoy, Syn. Char. Carb. Foss. Ireland, 1844, p. 11.—Woodward, Man. Mollusca, pt. 1, 1851, p. 90.—Saemann, Palæontographica, 3, 1852, p. 139.—Geinitz, Die Verst. der Grauwack, Leipzig, 1853, p. 26.—McCoy, British Pal. Rocks Foss., 1854, p. 322.—Barrande, Neues Jahrb. Min., etc., 1854, p. 10, pl. 1, fig. 12; ibid., 1855, p. 258; Bull. Soc. Geol. France, 2d ser., 12, 1855, p. 158, pl. 5, fig. 5.—Billings, Canadian Nat. Geol., 2, 1857, p. 136, pl. 2, fig. 4.—Chapman, Canadian Jour., n. s., 8, 1863, p. 22; Expos. Min. Geol. Canada, 1864, p. 130.—Barrande, Syst. Sil. du Centre Boheme, 2, pt. 1, 1867, p. 187.—Blake, Mon. British Foss. Cephalopoda, 1882, p. 59.—Zittel, Handb. Pal., 2, 1884, p. 375.—Miller, N. A. Geol. Pal., 1889, p. 452.—Whidborne, Mon. Dev. Fauna South England, 1, Pal. Soc., 1890, p. 111.—Koken, Die Leitfossilien, Leipzig, 1896, p. 49.—Hyatt, Zittel-Eastman Textb. Pal., 1, 1900, p. 532; 2d ed., 1913, p. 612.—Jaekel, Zeits. d. d. geol. Gesell., 54, Protok., 1902, pp. 8, 68, 80.-Jaekel in Ruedemann, Amer. Geol., 31, 1903, p. 200.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 131.

Phragmoceras angustum (Newell).
Gomphoceras angustus Newell, Proc. Boston Soc. Nat. Hist., 23, 1888, p. 475, fig.
Phragmoceras angustum Kindle and Breger, 28th Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1904, p. 477, pl. 18, fig. 1.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 132, fig. 1383.
Niagaran: Wabash City and Grant County, Indiana.

Phragmoceras byronense Worthen.

Phragmoceras Byronensis Worthen, Geol. Surv. Illinois, 6, 1875, p. 506, pl. 24, fig. 6.

Niagaran: Rock Island, Illinois. (Drift probably from Port Byron, Illinois.)

PHRAGMOCERAS CONSTRICTUM Chapman. See Oncoceras constrictum.

Phragmoceras ellipticum Hall and Whitfield.

Phragmoceras ellipticum Hall and Whitfield, Geol. Surv. Ohio, Pal., 2, 1875, p. 152, pl. 8, fig. 11.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 637, fig.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 133, fig. 1384.

Phragmoceras cf. ellipticum Kindle and Breger, 28th Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1904, p. 477, pl. 19, fig. 5.

Niagaran: Highland County, Ohio; Huntington, Indiana.

Plesiotypes.—Cat. No. 52949, U.S.N.M. (Kindle and Breger).

Phragmoceras hector Billings.

Phragmoceras Hector Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865 (adv. sheets, 1862), p. 163, fig. 147a, b.—Miller, N. A. Geol. Pal., 1889, p. 452, fig. 756, p. 453; fig. 757.—Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 2, 1895, p. 104.

Niagaran (Guelph): New Hope, Ontario.

Phragmoceras hoyi Whitfield.

Phragmoceras Hoyi Whitfield, Ann. Rep. for 1877, Wisconsin Geol. Surv., 1878, p. 86; Geol. Wisconsin, 4, 1882, p. 300, pl. 19, figs. 4, 5.—Chamberlin, ibid., 1, 1883, p. 194, fig.

Niagaran (Racine): Near Wauwatosa, Wisconsin.

Phragmoceras hoyi compressum Whitfield.

Phragmoceras Hoyi var. compressum Whitfield, Ann. Rep. for 1877, Wisconsin Geol. Surv., 1878, p. 86; Geol. Wisconsin, 4, 1882, p. 301, pl. 20, fig. 3.

Niagaran (Racine): Near Wauwatosa and Racine, Wisconsin.

Phragmoceras labiatum Whitfield.

Phragmoceras labiatum Whitfield, Ann. Rep. for 1877, Wisconsin Geol. Surv., 1878, p. 86.—Geol. Wisconsin, 4, 1882, p. 302, pl. 20, figs. 1, 2.

Niagaran (Waukesha): Ashford, Wisconsin.

Phragmoceras lineolatum Whiteaves.

Phragmoceras lineolatum Whiteaves, Geol. Surv. Canada, Ann. Rep., n. s., 14, App. F, 1904, p. 57; Geol. Surv. Canada, Pal. Foss., 3, pt. 4, 1906, p. 265, pl. 34, figs. 1, 1a, 2, 3.

Niagaran: Ekwan River, Canada.

PHRAGMOCERAS NATATOR Lesley. See Barrandeoceras natator.

Phragmoceras nestor Hall.

Phragmoceras nestor Hall, 20th Rep. New York State Cab. Nat. Hist., 1868 (extras, Jan., 1865), pp. 347, 363, figs. 7, 8; rev. ed., 1870, p. 405, figs. 3, 4.—Day, Trans. Wisconsin Acad. Sci., Arts, Letters, 4, 1879, p. 115.—Whitfield, Geol. Wisconsin, 4, 1882, p. 301, pl. 19, fig. 3.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 132, fig. 1380, 1381.

Gomphoceras Nestor Foord, Cat. Foss. Ceph. British Mus., 1, 1888, p. 232.

Niagaran (Racine): Wauwatosa and Waukesha, Wisconsin.

Phragmoceras nestor canadense Whiteaves.

Phragmoceras Nestor var. Canadense Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 1, 1884, p. 39, pl. 7, figs. 1, 1a, b; Pal. Foss., Geol. Surv. Canada, 3, pt. 2, 1895, p. 105 (loc. occ.).

Niagaran (Guelph): Hespeler, Elora, and Durham, Ontario.

Phragmoceras parvum Hall and Whitfield.

Phragmoceras parvum Hall and Whitfield, Geol. Surv. Ohio, Pal. 2, 1875, p. 151, pl. 8, fig. 10.—Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 1, 1884, p. 41, pl. 7, fig. 2.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 639, fig.—Whiteaves, Pal. Fossils, Geol. Surv. Canada, 3, pt. 2, 1895, p. 105 (loc. occ.).—Clarke and Ruedemann, Mem. New York State Mus., 5, 1903, p. 99. pl. 21, figs. 1-8.—Kindle and Breger, 28th Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1904, p. 477, pl. 25, figs. 3, 4.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 132, fig. 1382.

Niagaran (Guelph): Cedarville, Ohio; Rochester, New York; Durham, Ontario; Huntington, Indiana.

PHRAGMOCERAS PRÆMATURUM Billings. See Mælonoceras prematurum.

Phragmoceras ventricosum (? Sowerby) Owen. Not recognized.

Phragmoceras ventricosum? Owen, Geol Expl. Iowa, Wisconsin, Illinois, 2d ed., 1844, p. 76, pl. 13, fig. 9.

Niagaran: Iowa and Wisconsin.

Phragmoceras whitneyi Parks.

Phragmoceras whitneyi Parks in Tyrrell, 22d Rep. Ontario Bur. Mines, 1913, p. 36.

Niagaran (Guelph): Severn River, Ontario.

PHRAGMOLITES Conrad. Genotype: P. compressus Conrad.

Phragmolites Conrad, Ann. Geol. Rep. New York, 1838, p. 119.

Phragmolithes, Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 617.

Conradella Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, pp. 851; 904.—Koken, Neues Jahrb. f. Min., Geol., Pal., 1, 1898, p. 8.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 949. (Genotype: C. obliqua Ulrich and Scofield.)

Phragmolites bellulus (Ulrich).

Conradella bellula Ulrich, Geol. Minnesota, 3, pt. 2, 1897, p. 910, pl. 67, figs. 23-26.

Maysville (Fairmount): Covington, Kentucky.

Holotype.—Cat. No. 45751, U.S.N.M.

Phragmolites compressus Conrad.

Phragmolites compressus Conrad, 2d Ann. Rep. New York Geol. Surv., 1838, p. 119.—Weller, Geol. Surv. New Jersey, Pal. 3, 1903, p. 178, pl. 12, figs. 16, 17.

Phragmolithes compressus Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 617.

Cyrtolites compressus Hall, Pal. New York, 1, 1847, p. 188, pl. 40A, figs. 2a-f.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 167, pl. 12, fig. 10a, b; Man. Geol., 1860, p. 96, fig. 85.—Hall, Rep. Geol. Surv. Wisconsin, 1862, p. 40, fig. 4.—Chamberlin, Geol. Wisconsin, 1, 1883, p. 158, fig.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 182, fig.—Whiteaves, Canadian Rec. Sci., 5, 1893, p. 323; Pal. Foss., Geol. Surv. Canada, 3, pt. 2, 1895, p. 124 (loc. occ.).

Conradella compressa Ruedemann, Bull. New York State Mus., 49, 1901, p. 30.

Trenton: Middleville, Watertown, etc., New York; New Jersey; Ontario; etc.

Phragmolites desideratus (Billings).

Cyrtolites desideratus Billings, Cat. Sil. Fossils, Anticosti, Geol. Surv. Canada, 1866, p. 21,

Richmond (English Head) and Gamachian: Macasty Bay, etc., Anticosti.

Phragmolites dyeri (Hall).

Cyrtolites dyeri Hall, 24th Rep. Regents New York State Cab. Nat. Hist., 1872, p. 230, pl. 8, figs. 7, 8 (adv. sheets, 1871).—Meek, Pal. Ohio, 1, 1873, p. 149, pl. 13, figs. 2a, b, c (not 2d and e=P. elegans Miller).—Miller, Cin. Quart. Jour. Sci., 1, 1874, p. 309.

Conradella dyeri Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 909, pl. 67, figs. 30-33.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 957, pl. 39, figs. 8-8c.

Phragmolithes dyeri Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 618, fig. 828e, f.

Richmond: Richmond and Versailles, Indiana; Oxford, Waynesville, etc., Ohio; near Maysville, Kentucky; Spring Valley, Minnesota.

Plesiotype.—Cat. No. 45752, U.S.N.M.

Phragmolites dyeri cellulosus (Ulrich and Scofield).

Conradella dyeri var. cellulosa Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 910, pl. 67, figs. 27-29.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, pl. 39, fig. 9.

Trenton (Prosser): St. Paul and Cannon Falls, Minnesota.

Holotype.—Cat. No. 45753, U.S.N.M.

Phragmolites elegans (Miller).

Cyrtolites dyeri (part) Meek, Pal. Ohio, 1, 1873, p. 149, pl. 13, figs. 2d, 2e.

Cyrtolites elegans Miller, Cincinnati Quart. Jour. Sci., 1, 1874, p. 310, fig. 31.—Miller, N. A. Geol. Pal., 1889, p. 402, fig. 668.

Conradella elegans Ulrich and Scofield, Geol. Minnesota, 3, 1897, p. 911, pl. 67, figs. 12-15.

Maysville (Corryville): Cincinnati, Ohio, and vicinity.

Plesiotypes.—Cat. No. 45754, U.S.N.M.

Phragmolites fimbriatus (Ulrich and Scofield).

Conradella fimbriata Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 907, pl. 62, fig. 66; pl. 67, figs. 7-10.

Phragmolithes fimbriatus Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 617, fig. 828c, d.

Cyrtolites fimbriatus Miller, N. A. Geol. Pal., 2d ed., 1897, p. 767 (gen. ref.).

Black River: Minneapolis, Minnesota, and Dixon, Illinois (Platteville); Lincoln County, Missouri (Decorah).

Cotypes.—Cat. No. 45755, U.S.N.M.

Phragmolites grandis (Ulrich).

Conradella grandis Ulrich, Geol. Minnesota, 3, pt. 2, 1897, p. 908, pl. 62, fig. 67; pl. 67, figs. 16-18.

Stones River (Lebanon): Lebanon, Tennessee.

Cotypes.—Cat. No. 45756, U.S.N.M.

Phragmolites imbricatus (Meek and Worthen).

Cyrtolites imbricatus Meek and Worthen, Geol. Surv. Illinois, 3, 1868, p. 340, pl. 4, fig. 12.

Conradella imbricata Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 91 pl. 67, fig. 11.

Upper Medinan (Girardeau): Alexander County, Illinois.

Plesiotype.—Cat. No. 45757, U.S.N.M.

ragmolites obliquus (Ulrich and Scofield).
Conradella obliqua Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 906, pl. 67, figs. 1–6.
Black River (Decorah): St. Paul, Cannon Falls, etc., Minnesota.
Cotypes.—Cat. Nos. 45758, 45759, U.S.N.M.

ragmolites pannosus (Billings).
Cyrtolites pannosus Billings, Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 20.
Conradella pannosa Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 859 (gen. ref.).
Richmond (English Head and Charleton): Charleton Point, etc., Anticosti.

ragmolites similis (Ulrich).
Conradella similis Ulrich, Geol. Minnesota, 3, pt. 2, 1897, p. 906.
Black River (Lowville): Mercer and Boyle Counties, Kentucky.
Cotypes.—Cat. No. 47568, U.S.N.M.

ragmolites triangularis (Ulrich and Scofield).
Conradella triangularis Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 908, pl. 67, figs. 19–22.
Phragmolithes triangularis Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 617, fig. 828a, b.
Black River (Platteville): Minneapolis, Minnesota; Janesville and Beloit, Wisconsin; Dixon, Illinois.
Cotypes.—Cat. Nos. 45760–45762, U.S.N.M.

RAGMOSTOMA Hall. See Carinaropsis Hall.

RAGMOSTOMA NATATOR Hall. See Carinaropsis cymbula.

ycograptus Gurley. Genotype: P. brachymera Gurley.
Phycograptus Gurley, Jour. Geol., 4, 1896, p. 89.—Miller, N. A. Geol. Pal., 2d App., 1897, p. 729.—Ruedemann, Mem. New York State Mus., 11, pt. 2, 1908, p. 244.
Observation.—Genus not recognized as valid. The genotype is based on the frontal view of a Dicellograptus and the second species is not a graptolite.

ycograptus brachymera Gurley. Not recognized.
Phycograptus brachymera Gurley, Jour. Geol., 4, 1896, p. 89, pl. 5, fig. 6.—Ruedemann, Mem. New York State Mus., 11, pt. 2, 1908, p. 245, fig. 150.
Chazyan (Normanskill): Stockport, New York.

ycograptus lævis (Hall).
Graptolithus? lævis Hall, Pal. New York, 1, 1847, p. 274, pl. 74, fig. 7.—Chapman, Canadian Jour., n. s., 1, 1856, p. 390.
Phycograptus lævis Gurley, Jour. Geol., 4, 1896, pp. 89, 100 (gen. ref.).—Ruedemann, Mem. New York State Mus., 11, pt. 2, 1908, p. 246.
Utica: Turin, Lewis County, New York.
Observation.—Hall's type shows no structure and a second specimen appears to be made up of slender sponge spicules. Name should be dropped. (Ruedemann, 1908.)

YLLODICTYA Ulrich. Genotype: P. frondosa Ulrich.
Phyllodictya Ulrich, Jour. Cincinnati Soc. Nat. Hist., 5, 1882, p. 153.—Miller, N. A. Geol. Pal., 1889, p. 315.—Ulrich, Geol. Surv. Illinois, 8, 1890, p. 390; Geol. Minnesota, 3, 1893, p. 141.—Pocta, Syst. Sil. Centre Boheme, 8, pt. 1, 1894, p. 15.—Ulrich, Zittel's Textb. Pal. (Engl. ed), 1896, p. 280.—Simpson,

PHYLLODICTYA—Continued.

14th Ann. Rep. State Geol. New York for 1894, 1897, p. 531.—Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 49.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 159.—Bassler, Bull. U. S. Nat. Mus., 77, 1911, p. 135; Zittel-Eastman Textb. Pal., 1913, p. 346.

Phyllodictya frondosa Ulrich.

Phyllodictya frondosa Ulrich, Jour. Cincinnati Soc. Nat. Hist., 5, 1882, p. 174, pl. 8, figs. 11–11b; Geol. Minnesota, 3, 1893, p. 142.—Simpson, 14th Ann. Rep. State Geol. New York for 1894, 1897, fig. 88 (p. 531).—Bassler, Bull. Virginia Geol. Surv., 2a, 1909, pl. 23, figs. 6–8.

Black River (Lowville): High Bridge and Frankfort, Kentucky; Central Tennessee; Southwestern Virginia.

Cotypes and *plesiotypes*.—Cat. Nos. 43705, 43598, U.S.N.M.

Phyllodictya varia Ulrich.

Phyllodictya varia Ulrich, Geol. Minnesota, 3, 1893, p. 144, pl. 14, figs. 1–8.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 159, fig. 208j.—Bassler, Bull. U. S. Nat. Mus., 77, 1911, pp. 136, 137, fig. 60.

Black River (Decorah): Minneapolis and Cannon Falls Minnesota; Lake Nipissing, Ontario.

Middle Ordovician (Wassalem): Uxnorm, Esthonia, Russia.

Cotypes.—Cat. No. 43597, U.S.N.M.

PHYLLOGRAPSUS Nicholson. See Phyllograptus Hall.

PHYLLOGRAPTUS Hall. Genotype: P. typus Hall.

Phyllograptus Hall, Geol. Surv. Canada, Rep. Progr. for 1857, 1858, pp. 135, 13; Canadian Nat. Geol., 3, 1858, p. 168–170; Pal. New York, 3, 1859, p. 5; 12th Rep. New York State Cab. Nat. Hist., 1859, p. 52; Geol. Surv. Canada, dec. 2, 1865, p. 118, figs. 1–3.—Carruthers, Geol. Mag., 5, 1868, p. 73, 132.—Hall, 20th Rep. New York State Cab. Nat. Hist., 1868, p. 217, rev. ed., p. 252.—Zittel, Handb. Pal., 1, 1879, p. 301.—Tullberg, Sveriges Geol. Unders., ser. C, No. 55, 1883, p. 12.—Spencer, Bull. Mus. Univ. State Missouri, 1, 1884, p. 15; Trans. Acad. Sci. St. Louis, 4, 1884, p. 565.—Miller, N. A. Geol. Pal., 1889, p. 200.—Holm, Geol. Mag., dec. 4, 2, 1895, pp. 433, 487; Geol. Foren. Stockholm Forhandl., 17, 1895, p. 343.—Wiman, Nat. Sci., 9, 1896, p. 191.—Koken, Die Leitfossilien, Leipzig, 1896, p. 328.—Walther, Zeits. d. d. geol. Gesell., 49, 1897, p. 252.—Roemer and Frech, Leth. geog., 1 Theil, Leth. Pal., 1, 3 Lief, 1897, p. 603.—Ruedemann, Amer. Nat., 32, 1898, p. 5.—Zittel-Eastman Textb. Pal., 1, 1900, p. 119.—Elles and Wood, Mon. British Grapt., Pal. Soc., 1902, p. 98.—Ruedemann, Mem. New York State Mus., 7, pt. 1, 1904, pp. 703–706.—Grabau and Shimer, N. A. Index Fossils, 1, 1906, p. 29.—Ruedemann, Zittel-Eastman Textb. Pal., 2d ed., 1913, p. 129.

Phyllograpsus Nicholson, Quart. Jour. Geol. Soc. London, 24, 1868, p. 9, 132; Mon. British Grapt., 1872, p. 124.

Phyllograptus angustifolius Hall.

Phyllograptus angustifolius Hall, Geol. Surv. Canada, Rep. for 1857, 1858, p. 139; Canadian Nat. Geol., 3, 1858, p. 172.—Salter, Quart. Jour. Geol. Soc. London, 19, 1863, p. 137, fig. 7a, b.—Billings, Geol. Canada, Geol. Surv. Canada, 186 p. 228, fig. 237.—Hall, Geol. Surv. Canada, dec. 2, 1865, p. 125, pl. 16, fig 17–21; p. 16, fig. 22; 20th Rep. New York State Cab. Nat. Hist., 1868, p. 183, f 23; rev. ed., p. 213, fig. 23; p. 224.—Nicholson, Quart. Jour. Geol. Soc., 24, 1868, p. 132.—Linnarsson, Sver. Geol. Und., Afh. och upps., ser. C, no. 31,

Phyllograptus angustifolius—Continued.

1879, p. 5.—Brogger, Die sil. Etagen 2 and 3, 1882, p. 41.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 639, figs.—Ami, Geol. Surv. Canada, Rep. 3, pt. 2, 1889, p. 50k ff.—Holm, Sveridges Geol. Unders., ser. C, No. 150, 1895, p. 29, pl. 3, figs. 1-12; pl. 4, fig. 6; Geol. For. Forh., 17, Heft 3, 1895, p. 319, pl. 3; p. 345, pl. 13, figs. 1-12; pl. 14, figs. 1-10; pl. 15, figs. 1-15; pl. 16, figs. 1-20; Geol. Mag., dec. 4, 2, 1895, p. 488, pl. 14, figs. 1-12.—Wiman, Bull. Geol. Inst. Upsala, 4, pt. 2, 1895, p. 39, pl. 9, fig. 8.—Frech, Leth. geog., 1 Theil, Leth. Pal., 1, 3 Lief, 1897, p. 559, fig. 135.—Roemer and Frech, ibid., 1897, p. 606, figs. 168, 172.—Elles, Quart. Jour. Geol. Soc. London, 54, 1898, p. 496.—Elles and Wood, Mon. British Grapt., pt. 1, Pal. Soc., 1902, p. 100, pl. 13, figs. 7a-f, fig. 59.—Ruedemann, New York State Pal., Ann. Rep., 1902, pp. 554, 556, 570; Mem. New York State Mus., 7, pt. 1, 1904, pp. 711-714, pl. 15, figs. 31-34, fig. 94, on p. 704; fig. 97, p. 713.—Grabau and Shimer, N. A. Index Fossils, 1, 1906, p. 30, fig. 46.

Phyllograptus cf. angustifolius Tullberg, Sver. Geol. Und., Afh. och upps., ser. C, No. 50, 1882, p. 22.

Phyllograpsus angustifolius Nicholson, Mon. British Grapt., 1872, p. 51, fig. 18.

Canadian: Point Levis, Quebec (Levis); Deep Kill, Rensselaer County, and Mount Moreno, near Hudson, New York (Deep Kill, Tetragraptus, Didymograptus, and Diplograptus zones); Sweden; England (Skiddaw).

Phyllograptus anna Hall.

Phyllograptus anna Hall, Geol. Surv. Canada, Canadian Org. Rem., dec. 2, 1865, p. 124, pl. 16, figs. 11-16; 20th Rep. New York State Cab. Nat. Hist., 1868, pl. 4, figs. 6, 7; rev. ed., 1870, pl. 4, figs. 6-7.—Lapworth, Proc. and Trans. Roy. Soc. Canada, 4, 1886, p. 168.—Ami, Geol. Surv. Canada, Rep., 2d ser., 3, pt. 2, 1889, p. 116k.—Gurley, Jour. Geol., 4, 1896, p. 294.—Elles, Quart. Jour. Geol. Soc. London, 54, 1898, p. 494, fig. 16.—Elles and Wood, Mon. British Grapt., Pal. Soc., 1902, p. 101, pl. 13, figs. 6a-f, fig. 60a, b.—Ruedemann, New York State Pal. Ann. Rep., 1902, pp. 566, 571; Mem. New York State Mus., 7, pt. 1, 1904, pp. 714-716, pl. 15, figs. 23-30, figs. 98, 99.—Grabau and Shimer, N. A. Index Fossils, 1, 1906, p. 30.

Canadian: Point Levis, Quebec (Levis, Didymograptus zone); Deep Kill, Rensselaer County, and Mount Moreno, near Hudson, New York (Deep Kill, Tetragraptus, and Didymograptus bifidus zones); Arkansas; Nevada; England (Skiddaw).

Phyllograptus(?) dubius Spencer.

Phyllograptus(?) dubius Spencer, Trans. Acad. Sci. St. Louis, 4, 1884, p. 565, pl. 1, fig. 1; Bull. Mus. Univ. Missouri, 1, 1884, p. 15, pl. 1, fig. 1.

Niagaran dolomite: Near Hamilton, Ontario.

Observation.—Not a graptolite (Ruedemann).

PHYLLOGRAPTUS FOLIUM var. TYPUS Hall. See Phyllograptus typus.

Phyllograptus ilicifolius Hall.

Phyllograptus ilicifolius Hall, Geol. Surv. Canada, Rep. Progr. for 1857, 1858, p. 139; Canadian Nat. Geol., 3, 1858, p. 171; Geol. Surv. Canada, Can. Org. Rem., dec. 2, 1858, p. 121, pl. 16, figs. 1-10; 20th Rep. New York State Cab. Hist., 1868, p. 195, pl. 4, figs. 1-5; rev. ed., 1870, p. 225, pl. 4, figs. 1-5; p. 224.—Roemer and Frech, Leth. geog., 1 Theil, Leth. Pal., 1, 3 Lief, 1897, p. 606, fig. 171.—Ruedemann, Bull. New York State Mus., 52, 1902, p. 590, fig. 19; Ann. Rep. New York State Pal., 1902, pp. 554, 556; Mem. New York State Mus., 7, pt. 1, 1904, pp. 706, 708, pl. 15, figs. 15-22; figs. 95, 96.—Grabau and Shimer, N. A. Index Fossils, 1, 1906, p. 30, fig. 19.

Phyllograptus ilicifolius—Continued.

Canadian: Point Levis, Quebec (Levis, Clonograptus, Didymograptus, and Diplograptus zones); Deep Kill, Rensselaer County, New York (Deep Kill, Tetragraptus and Didymograptus zones); England (Skiddaw).

Phyllograptus loringi White.

Phyllograptus loringi White, Rep. U. S. Geogr. Surv., West 100th Merid., 4, War Dep., 1877, p. 51, pl. 3, fig. 1a, b (Prelim. Rep., 1874, p. 9).

Canadian: Fish Spring, House Range, Utah.

PHYLLOGRAPTUS SIMILIS Hall. See Tetragraptus similis.

PHYLLOGRAPTUS STELLA Hopkinson. See Didymograptus (Isograptus) caduceus.

Phyllograptus typus Hall.

Phyllograptus typus Hall, Geol. Surv. Canada, Rep. for 1857, 1858, p. 137; ibid., dec. 2, 1858, p. 119, pl. 15, figs. 1–12; p. 16, fig. 23; Canadian Nat. Geol., 3, 1858, p. 170; 12th Rep. New York State Cab. Nat. Hist., 1859, p. 54, figs. 1, 2; Pal. New York, 3, 1859, p. 505, figs. 1, 2.—Billings, Geol. Canada, Geol. Surv. Canada, 1863, p. 228, fig. 238.—Chapman, Canadian Jour., n. s., 8, 1863, p. 191, fig. 160a; Expos. Min. Geol. Canada, p. 163, fig. 160a.—Billings, Geol. Surv. Canada, Pal. Foss., 1, 1865, pp. 366, 375.—Tornquist, Lunds. Univ. Arsskrift, 1, pt. 3, 1865, p. 16, pl. 1, figs. 9, 10.—Hall, 20th Rep. New York State Cab. Hist., 1868, p. 183, fig. 24; rev. ed., p. 213, fig. 24; p. 224.—Nicholson, Quart. Jour. Geol. Soc. London, 24, 1868, p. 133, pl. 5, fig. 16.—Etheridge, Ann. Mag. Nat. Hist., 4th ser., 14, 1874, p. 3, pl. 3, figs. 9, 10.—Zittel, Handb. Pal., 1, Munich, 1879, p. 301, fig. 209.—Brogger, Die Sil. Etagen 2, 3, 1882, p. 41.—Malaise, Ann. Soc. Geol. Belgium, 15, 1888, p. 42.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 640, figs.—Ami, Geol. Surv. Canada, Rep. 3, pt. 2, 1889, p. 50.—Miller, N. A. Geol. Pal., 1889, p. 200, fig. 206.—Gurley, Jour. Geol., 4, 1896, p. 294.—Roemer and Frech, Leth. Geog., 1, Theil, Leth. Pal., 1, 1897, p. 605.—Elles, Quart. Jour. Geol. Soc. London, 54, 1898, p. 494f.—Ruedemann, New York State Pal., Ann. Rep., 1902, p. 566; Mem. New York State Mus., 7, pt. 1, 1904, pp. 708–711, pl. 15, figs. 35–37.—Grabau and Shimer, N. A. Index Fossils, I, 1906, p. 29, fig. 44.

Phyllograpsus typus Nicholson, Mon. British Grapt., Pal. Soc., 1872, p. 125, fig. 64.

Phyllograptus cf. typus Tullberg, Skanes Grapt. in Sver. Geol. Und. Afh. och upps., ser. C, No. 50, 1882, p. 21.—Elles and Wood, Mon. British Grapt., pt. 1, Pal. Soc., 1902, p. 99, pl. 13, figs. 5a, b; fig. 58.

Phyllograptus folium var. typus McCoy, Geol. Surv. Victoria, Prodr. Pal. Victoria, dec. 1, 1874, p. 7f, pl. 1, figs. 1–4.

Canadian: Point Levis, Quebec (Levis, Phyllograptus typus zone); Deep Kill, Rensselaer County, New York (Deep Kill, Didymograptus bifidus zone); Newfoundland; Arkansas; Great Britain (Skiddaw); Sweden; Belgium; Australia.

PHYLLOPORA (part) Ulrich. See Chasmatopora Eichwald.

PHYLLOPORINA Ulrich. See Chasmatopora Eichwald.

PHYLLOPORINA TRENTONENSIS Ulrich. See Chasmatopora fenestrata.

PHYSETOMYA Ulrich. Genotype: P. acuminata Ulrich.

Physetomya Ulrich, Geol. Surv. Ohio, 7, 1893, p. 693.—Miller, N. A. Geol. Pal., 2d App., 1897, p. 784.

Physetomya acuminata Ulrich.

Physetomya acuminata Ulrich, Geol. Surv. Ohio, 7, 1893, p. 693, pl. 49, figs. 12–14.

Maysville (Fairmount): Cincinnati, Ohio.

PHYTOPSIS Hall. Genotype: P. tubulosa Hall.

Phytopsis Hall, Pal. New York, 1, 1847, pp. 38, 315.—Hitchcock, Geol. Vermont, 1, 1861, p. 277.—Miller, N. A. Geol. Pal., 1889, p. 134.

PHYTOPSIS CELLULOSUM Hall. See Tetradium cellulosum.

Phytopsis tubulosa (Hall).

Phytopsis tubulosum Hall, Pal. New York, 1, 1847, p. 38, p. 315, pl. 8, figs. 1a–e.—Emmons, Man. Geology, 1860, p. 95, fig. 81.—Lincklaen, 14th Rep. New York State Cab. Nat. Hist., 1861, pl. 11, fig. 13.—Hitchcock, Geol. Vermont, 1, 1861, p. 277, fig. 175.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 644, figs.—Miller, N. A. Geol. Pal., 1889, p. 134, fig. 62.—Clarke and Ruedemann, Bull. New York State Mus., 65, 1903, p. 9.

Fucoides demissus Vanuxem, Geol. New York, 3, 1842, p. 39, fig.—Emmons, Geol. New York, 2, 1842, p. 108; p. 109, figs. 35, 36; also pp. 383, 384, fig. 94, 95, 96.—Hall, Pal. New York, 1, 1847, p. 38, footnote.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 232, fig. 84, pl. 4; figs. 12, 13.

Black River (Lowville): Near Amsterdam, etc., New York.

PIANODEMA Foerste. Genotype: Orthis subæquata Conrad.

Bathycœlia Foerste, Bull. Sci. Lab. Denison Univ., 14, 1909, p. 221.

Pianodema Foerste (Bathycœlia preoccupied), Bull. Sci. Lab. Denison Univ., 17, 1912, p. 139.—Schuchert, Zittel-Eastman Textb. Pal., 1913, p. 382.

Pianodema amœna (N. H. Winchell).

Orthis amœna Winchell, 8th Ann. Rep. Geol. Nat. Hist. Surv. Minnesota, 1880, p. 65.

Orthis (Dalmanella) amœna Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 453, pl. 33, figs. 48–50.

Dalmanella amœna Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 200.

Trenton(?): Spring Valley, Minnesota.

Observation.—Closely related to P. subæquata perveta. The types were probably derived from the Black River of southern Minnesota.

Pianodema bellula (Meek).

Orthis bellula James, Cat. L. Sil. Foss. Cincinnati Group, 1871, p. 10 (nom. nud.).—Meek, Pal. Ohio, 1, 1873, p. 103, pl. 8, fig. 5,—Miller, Cincinnati Quart. Jour. Sci., 2, 1875, p. 31.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 507, figs.

Dalmanella bellula Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 224.

Dalmanella (Bathycœlia) bellula Foerste, Bull. Sci. Lab. Denison Univ., 14, 1909, p. 221.

Maysville (Fairmount): Cincinnati, Ohio, and vicinity.

Pianodema pogonipensis (Hall and Whitfield).

Orthis pogonipensis Hall and Whitfield, King's U. S. Geol. Expl. 40th Parl., 4, 1877, p. 232, pl. 1, figs. 9, 10.

Strophomena nemea Hall and Whitfield, ibid., 1877, p. 233, pl. 1, fig. 15.—Walcott, Mon. U. S. Geol. Surv., 8, 1884, p. 71.

Upper Pogonip: Pogonip Mountain, White Pine District, Nevada.

Cotypes.—Cat. Nos. 17220, 17242, U.S.N.M.

Pianodema stonensis (Safford).

Orthis stonensis Safford, Geol. Tennessee, 1869, p. 286.

Dalmanella stonensis Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 224, pl. 5C, figs. 4, 5.

Stones River (Pierce): Central Tennessee.

Plaesiomys subæquata (Conrad).

Orthis subæquata Conrad, Proc. Acad. Nat. Sci. Philadelphia, 1, 1843, p. 333.—Hall, Pal. New York, 1, 1847, p. 118, pl. 32, fig. 2; Geol. Wisconsin, 1, 1862, p. 42, figs. 1–3, and p. 436; 2d Ann. Rep. New York State Geol., 1883, pl. 34, figs. 19–24.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 194, pl. 9, f. 2.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 533, figs.

Orthis minneapolis N. H. Winchell, 8th Ann. Rep. Geol. Nat. Hist. Surv. Minnesota, 1880, p. 63.

Orthis perveta Hall, 2d Ann. Rep. New York State Geol., 1883, pl. 34, figs. 17, 18 (?16).

Dalmanella subæquata Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pp. 194, 207, 224, pl. 5C, figs. 6–11.—Weller, Geol. Surv. New Jersey, Pal., 3, 1903, p. 156, pl. 10, figs. 3, 4.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 261, fig. 311f–h.

Dalmanella perveta Hall and Clarke, ibid., 1892, p. 224, pl. 5C, figs. 13, 14.

Orthis (Dalmanella) subæquata Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 446, pl. 33, figs. 30–36.

Black River: Mineral Point, Wisconsin; Minneapolis, St. Paul, Cannon Falls, Fountain, etc., Minnesota; Decorah and McGregor, Iowa; Auburn, Lincoln County, Missouri; Montreal, Canada; New Jersey; Kentucky; etc.

Stones River (Pierce—Lebanon): Central Tennessee.

Plaesiomys subæquata circularis (N. H. Winchell).

Orthis circularis N. H. Winchell, 8th Ann. Rep. Geol. Nat. Hist. Surv. Minnesota, 1880, p. 66.

Orthis (Dalmanella) subæquata var. circularis Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 452, pl. 33, figs. 46, 47.

Black River: Minneapolis, Cannon Falls, etc., Minnesota (Decorah); High Bridge, Kentucky (Lowville).

Plaesiomys subæquata conradi N. H. Winchell.

Orthis conradi N. H. Winchell, 8th Ann. Rep. Geol. Nat. Hist. Surv. Minnesota, 1880, p. 68.

Orthis (Dalmanella) subæquata var. conradi Winchell and Schuchert, Minnesota Geol. Surv., 3, 1893, p. 449, pl. 33, figs. 37–39.

Black River: Minneapolis, Minnesota; Decorah, Iowa; Janesville and Beloit, Wisconsin (Platteville); Montreal, Canada.

Plaesiomys subæquata gibbosa (Billings).

Orthis gibbosa Billings, Geol. Surv. Canada; Rep. Progr. for 1856, 1857, p. 296. (Not Billings, 1859=Hebertella vulgaris Raymond.)

Dalmanella gibbosa Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 224.

Orthis (Dalmanella) subæquata var. gibbosa Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 451, pl. 33, figs. 43–45.

Black River: Near Ottawa and Bellville, Canada; Minneapolis, Cannon Falls, etc., Minnesota; Decorah, Iowa; Mineral Point, Wisconsin; Island of Montreal; and Pallideau Islands, Lake Huron.

Plaesiomys subæquata perveta (Conrad).

Orthis perveta Conrad, Proc. Acad. Nat. Sci. Philadelphia, 1, 1843, p. 333.—Hall, Pal. New York, 1, 1847, p. 120, pl. 32, fig. 5.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 194, pl. 9, fig. 5.—Hall, Geol. Wisconsin, 1, 1862, p. 42, fig. 7.—Billings, Geol. Canada, 1863, p. 130, fig. 57.—Hall, 36th Rep. New York State Mus. Nat. Hist., 1884, p. 75, pl. 3, fig. 6.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 529, 6 figs.

Planodema subæquata perveta—Continued.

Orthis media N. H. Winchell, 8th Ann. Rep. Nat. Hist. Surv. Minnesota, 1880, p. 64.

Orthis kassubae N. H. Winchell, ibid., 1880, p. 65.

?Orthis perveta Walcott, Mon. U. S. Geol. Surv., 8, 1884, p. 72, pl. 11, fig. 3.

Dalmanella perveta Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pl. 5C, fig. 12.

Orthis (Dalmanella) subæquata var. perveta Winchell and Schuchert, Geol. Minnesota, 3, 1893, pl. 33, figs. 40–42.

Dalmanella subæquata var. pervetus Ruedemann, Bull. New York State Mus., 49, 1902, p. 26.

Black River: Mineral Point, etc., Wisconsin; Minneapolis, St. Paul, Cannon Falls, etc., Minnesota; Decorah, Iowa; Dixon, Illinois; Tennessee.

Plesiotypes.—Cat. No. 17235, U.S.N.M.

PILOCERAS Salter. Genotype: P. invaginatum Salter.

Piloceras Salter, Quart. Jour. Geol. Soc. London, 15, 1859, p. 376.—Billings, Canadian Nat. Geol., 4, 1859, p. 364; ibid., 5, 1860, p. 170.—Chapman, Canadian Jour., n. s., 8, 1863, p. 22; Expos. Min. Geol. Canada, 1864, p. 130.—Barrande, Syst. Sil. du Centre Boheme, 2, pt. 1, 1867, p. 452.—Whitfield, Bull. Amer. Mus. Nat. Hist., 1, 1881, p. 27, fig. 4.—Hyatt, Proc. Boston Soc. Nat. Hist., 22, 1884, p. 266.—Zittel, Handb. Pal., 2, 1884, p. 362.—Foord, Geol. Mag., dec. 3, 4, 1887, pp. 541, 545; Rep. 57th Meeting British Assoc. Adv. Sci., 1888, p. 717; Cat. Foss. Ceph. British Mus., 1, 1888, p. 157.—Miller, N. A. Geol. Pal., 1889, p. 453.—Bather, Nat. Sci., 5, 1894, pp. 429, 433, fig. 5.—Clarke, Geol. Minnesota, 3, pt. 2, 1897, p. 769.—Hyatt, Zittel-Eastman Textb. Pal., 1, 1900, p. 515; 2d ed., 1913, p. 596.—Ruedemann, Bull. New York State Mus., 80, 1905, pp. 326, 329.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 45.

Proteropiloceras Ruedemann, Bull. New York State Mus., 80, 1905, pp. 326, 330.

Piloceras amplum Dawson.

Piloceras amplum Dawson, Canadian Nat., 10, 1883, pp. 1–4, figs. 1, 2.—Foord, Geol. Mag., dec. 3, 4, 1887, p. 543, fig. 2, p. 544; Cat. Foss. Ceph. British Mus., 1, 1888, p. 159, fig.—Ruedemann, Bull. New York State Mus., 80, 1905, p. 329, fig. 21.

Canadian (Beekmantown): Lachute, Canada.

Piloceras canadense Billings.

Piloceras Canadense Billings, Canadian Nat. Geol., 5, 1860, p. 171, fig. 16; Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 256.—Foord, Cat. Foss. Ceph. British Mus., 1, 1888, p. 162.

Canadian: Mingan Islands; Cape Norman and Port Aux Choix, Newfoundland (Quebec, F–H).

Piloceras corniculum Sardeson.

Piloceras corniculum Sardeson, Bull. Minnesota Acad. Nat. Sci., 4, 1896, p. 103, pl. 6, figs. 5–7.

Ozarkian (Oneota): Near Dresbach, Winona County, Minnesota.

Piloceras explanator Whitfield.

Piloceras explanator Whitfield, Bull. Amer. Mus. Nat. Hist., 1, 1886, p. 323, pl. 28, figs. 1–4.—Foord, Cat. Foss. Ceph. British Mus., pt. 1, 1888, p. 162.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 650, figs.—Clarke, Geol. Minnesota, 3, 1897, p. 769, pl. 2.—Ruedemann, Bull. New York State Mus., 80, 1905, p. 329, pl. 10–13, pl. 9, fig. 3; ibid., 90, 1906, p. 429, pl. 10, 11.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 45, fig. 1243.—Seely, Vermont State Geol., Rep. 7, 1910, pl. 57, fig. 11.

Canadian (Beekmantown): Fort Cassin, Vermont, and Valcour, New York.

Piloceras gracile Billings.
Piloceras gracile Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 257.
Canadian (Quebec-H): Schooner Island, Pistolet Bay, Newfoundland.

PILOCERAS NEWTON-WINCHELLI Clarke. See Clarkoceras newton winchelli.

Piloceras triton Billings.
Piloceras Triton Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 257.
Canadian (Quebec, G-H): West side Pistolet Bay, Newfoundland.

PILOCERAS WINCHELLI Miller. See Clarkoceras newton winchelli.

Piloceras wortheni Billings.
Piloceras wortheni Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 256, fig. 240a-d.—Miller, N. A. Geol. Pal., 1889, p. 453, fig. 758.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 46, fig. 1244.
Canadian (Quebec-H): Port aux Choix, Newfoundland.

PINNAPORELLA Simpson. See Ptiloporella Hall.

PINNAPORINA Simpson. See Ptiloporella Hall.

PISOCRINUS Dekoninck. Genotype: P. pilula Dekoninck.
Pisocrinus Dekoninck, Bull. Acad. Roy. Belgique, 2d ser., 4, 1858, p. 93.—Salter, Cat. Camb. Sil. Foss., 1873, p. 128.—Angelin, Icon. Crin., 1878, p. 20.—Zittel, Handb. Pal., 1, Munich, 1879, p. 348.—Wachsmuth and Springer, Proc. Acad. Nat. Sci. Philadelphia, 1886, p. 172 (Rev. Pal., 3, p. 96); ibid., 1888, p. 350.—Miller, N. A. Geol. Pal., 1889, p. 269.—Bather, Kongl. Sven. Vet.-Akad. Handl., 25, No. 2, 1893, pp. 21, 22, pl. 1, figs. 1-23; p. 25, figs. 1-2; Nat. Sci., 12, 1898, p. 343.—Jaekel, Zeits. d. d. geol. Gesell., 52, 1900, p. 482.—Sollas, Quart. Jour. Geol. Soc. London, 56, 1900, p. 270.—Bather, Treatise on Zool., pt. 3, Echinoderma, London, 1900, p. 149, fig. 62.—Wachsmuth, Zittel-Eastman Textb. Pal., 1, 1900, p. 135.—Slocom, Field Columbian Mus., 2, Geol. Ser., 1908, p. 278.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 498.—Springer, Zittel-Eastman Textb. Pal., 2d ed., 1913, p. 208.
Triacrinus Ringueberg (not Münster), Proc. Acad. Nat. Sci. Philadelphia, 1884, p. 144. (Genotype: T. pyriformis Ringueberg.)

Pisocrinus baccula Miller and Gurley.
Pisocrinus baccula Miller and Gurley, Bull. Illinois State Mus. Nat. Hist., 7, 1895, p. 79, pl. 5, figs. 23-26.—Miller, N. A. Geol. Pal., 2d App., 1897, p. 749, fig. 1368.
Niagaran (Laurel): Near St. Paul, Indiana.

Pisocrinus benedicti Miller.
Pisocrinus benedicti Miller, 17th Ann. Rep. Indiana Dep. Geol. Nat. Res., 1892, p. 639, pl. 6, figs. 13-16 (adv. sheets, 1891, p. 29); N. A. Geol. Pal., 1st App., 1892, p. 681, fig. 1242.—Slocom, Field Columbian Mus., 2, Geol. Ser., 1908, p. 279, pl. 84, figs. 8-11.
Niagaran: Marion, Wabash, etc., Indiana; Lemont, Illinois.

Pisocrinus campana Miller.
Pisocrinus campana Miller, 17th Ann. Rep. Indiana Dep. Geol. Nat. Res., 1892, p. 642, pl. 11, figs. 4, 5 (adv. sheets, 1891, p. 32).
Niagaran: Wabash, Indiana.

Pisocrinus gemmiformis Miller.
Pisocrinus gemmiformis Miller, Jour. Cincinnati Soc. Nat. Hist., 2, 1879, p. 113, pl. 9, figs. 6, 6a, 6b, 6c; N. A. Geol. Pal., 1889, p. 269, fig. 391; 17th Ann.

Pisocrinus gemmiformis—Continued.

Rep. Dep. Geol. Nat. Res. Indiana, 1892, p. 636, pl. 6, figs. 10-12, 24, 25 (adv. sheets, 1891, p. 26).—Slocom, Field Columbian Mus., 2, Geol. Ser. 1908, p. 278, pl. 84, figs. 1-4.

Niagaran: Osgood, St. Paul, etc., Indiana (Osgood and Laurel); Romeo and Lemont, Illinois (Racine).

Pisocrinus glabellus Rowley.

Pisocrinus glabellus Rowley, Amer. Geol., 34, 1904, p. 270, pl. 16, figs. 10-12.

Niagaran (Bainbridge): Near St. Marys, Ste. Genevieve County, Missouri.

Pisocrinus globosus (Ringueberg).

Triacrinus globosus Ringueberg, Proc. Acad. Nat. Sci. Philadelphia, 1884, p. 146, pl. 3, fig. 2.

Pisocrinus globosus Miller, N. A. Geol. Pal., 1889, p. 269.—Rowley, Amer. Geol., 34, 1904, p. 270, pl. 16, figs. 8, 9.

Clinton (Irondequoit): Lockport, New York.

?Niagaran (Bainbridge): Near St. Marys, Ste. Genevieve County, Missouri.

PISOCRINUS GORBYI Miller (part). See Pisocrinus quinquelobus.

Pisocrinus gorbyi Miller.

Pisocrinus gorbyi Miller, 17th Ann. Rep. Indiana Dep. Geol. Nat. Res., 1892, p. 640, pl. 6, figs. 17-20 (adv. sheets, 1891, p. 30); N. A. Geol. Pal., 1st App., 1892, p. 681, fig. 1243.—Rowley, Amer. Geol., 34, 1904, p. 269, pl. 16, figs. 4-7.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 498.

Niagaran: Wabash, Marion, etc., Indiana; St. Marys, Ste. Genevieve County, Missouri (Bainbridge).

Pisocrinus granulosus Rowley.

Pisocrinus granulosus Rowley, Amer. Geol., 34, 1904, p. 269, pl. 16, figs. 1-3.

Niagaran (Bainbridge): Near St. Marys, Ste. Genevieve County, Missouri.

PISOCRINUS MILLIGANÆ Miller and Gurley. See Pisocrinus quinquelobus.

Pisocrinus pyriformis (Ringueberg).

Triacrinus pyriformis Ringueberg, Proc. Acad. Nat. Sci., Philadelphia, 1884, p. 145, pl. 3, fig. 1.

Pisocrinus pyriformis Miller, N. A. Geol. Pal., 1889, p. 270.

Clinton (Irondequoit): Lockport, New York.

Pisocrinus quinquelobus Bather.

Haplocrinites hemisphericus Troost, Amer. Jour. Sci. Arts, 2d ser., 8, 1849, p. 420; Proc. Amer. Assoc. Adv. Sci., 2, 1850, p. 61 (nom. nud.).

Pisocrinus gorbyi (in part) Miller, 17th Rep. Indiana Geol. Nat. Res., 1892, p. 640, pl. 6, figs. 21-23.

Pisocrinus quinquelobus Bather, Crin. Gotland, pt. 1, 1893, p. 27; Amer. Geol., 17, 1896, p. 184.—Slocom, Field Columbian Mus., 2, Geol. Ser., 1908, p. 280, pl. 84, figs. 5-7.

Pisocrinus milliganæ Miller and Gurley, Bull. 7, Illinois State Mus. Nat. Hist., 1895, p. 80, pl. 5, figs. 27, 28.—Miller, N. A. Geol. Pal., 2d App., 1897, p. 749, figs. 1369, 1370.—Foerste, Jour. Geol., 11, 1903, p. 712.—Wood, Bull. U. S. Nat. Mus., 64, 1909, p. 23.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 498, fig. 1807.

Niagaran: Decatur County, Tennessee (Brownsport): Romeo, Illinois (Racine).

Plesiotype.—Cat. No. 39941, U.S.N.M. (Troost's type of H. hemisphericus.)

PIZARROA Hoek. Genotype: P. quickuana Hoek.
Pizarroa Hoek, Neues Jahrb. Min. Geol. Pal., 34. 1912, p. 246.

Pizarroa quickuana Hoek.
Pizarroa quickuana Hoek, Neues Jahrb. Min. Geol. Pal., 34, 1912, p. 246, pl. 8, figs. 14, 15.
Ordovician: Totorapampa, Bolivia.

PLACENTULA Jones and Holl. Genotype: Primitia excavata Jones and Holl.
Placentula Jones and Holl, Ann. Mag. Nat. Hist., 5th ser., 17, 1886, p. 407.—Miller, N. A. Geol. Pal., 1st App., 1892, p. 710.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 351.

Placentula inornata Ulrich.
Placentula inornata Ulrich, Jour. Cincinnati Soc. Nat. Hist., 13, 1890, p. 124, pl. 10, figs. 14a, b.
Eden (Economy): Covington, Kentucky.

Placentula marginata Ulrich.
Placentula marginata Ulrich, Jour. Cincinnati Soc. Nat. Hist., 13, 1890, p. 124, pl. 10, figs. 13a-c.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 351, figs. 1666d, d′.
Maysville (Corryville): Cincinnati, Ohio.
Holotype.—Cat. No. 41364, U.S,N.M.

PLACOCYSTIS BALANOIDES Haeckel. See Ateleocystites balanoides.

PLACOCYSTIS CRUSTACEA Haeckel. See Ateleocystites balanoides.

PLÆSIOMYS Hall and Clarke. See Dinorthis Hall and Clarke.

PLÆSIOMYS LORICULA Hall and Clarke. See Dinorthis (Plæsiomys) deflecta.

PLÆSIOMYS PORCATA Hall and Clarke. See Dinorthis (Plæsiomys) porcata anticostiensis.

PLÆSIOMYS RECTA Hall and Clarke. See Dinorthis (Plæsiomys) deflecta.

PLÆSIOMYS RETRORSA Hall and Clarke. See Dinorthis carleyi.

PLANOLITES Nicholson. Genotype: P. vulgaris Nicholson.
Planolites Nicholson, Proc. Roy. Soc. London, 21, 1873, p. 289.—Nicholson and Hinde, Canadian Jour., n. s., 14, 1874, p. 138.—Nicholson, Rep. Pal. Prov. Ontario, pt. 2, 1875, p. 41.—Miller, N. A. Geol. Pal., 1889, p. 520.—Walcott, Proc. U. S. Nat. Mus., 12, 1890, p. 34.

PLANOLITES VIRGATUS Walcott. See Palæophycus virgatum.

Planolites vulgaris Nicholson.
Planolites vulgaris Nicholson and Hinde, Canadian Jour., n. s., 14, 1874, p. 139.—Nicholson, Rep. Pal. Prov. Ontario, pt. 2, 1875, p. 42.
Upper Medinan (Cataract): Dundas, Ontario.

PLANORBIS TRILOBATUS Conrad. See Bucanella trilobata.

PLASMOPORA Edwards and Haime. Genotype: Porites petaliformis Lonsdale.
Plasmopora Edwards and Haime, Compt. Rend. de l'Acad. Sci., 29, 1849, p. 262; Mon. d. Polyp. Foss. d. Terr. Pal., 1851 (Arch du Mus. d'Hist. Nat., 5), pp. 150, 221.—Pictet, Traite de Pal., 2d ed., 4, 1857, p. 438.—Milne-Edwards, Hist. Nat. d. Corall., 3, 1860, p. 239.—Rominger, Geol. Surv. Michigan, 3, pt. 2, 1876, p. 13.—Nicholson, Tab. Corals Pal. Period, 1879, p. 245.—Zittel,

PLASMOPORA—Continued.

Handb. Pal., 1, 1879, p. 212.—Nicholson and Etheridge, Mon. Sil. Foss. Girvan Dist., 1880, pp. 263, 264.—Roemer, Leth. geog., pt. 1, Leth. Pal., 1883, p. 510.—Koch, Palæontographica, 29, 1883, pp. 334, 343.—Miller, N. A. Geol. Pal., 1889, p. 200.—Koken, Die Leitfossilien, Leipzig, 1896, p. 314.—Sardeson, Neues Jahrb. Min. Geol. Pal., Beilage-Band, 10, 1896, p. 252.—Lambe, Cont. Can. Pal., Geol. Surv. Canada, 4, pt. 1, 1899, p. 82.—Kiär, Palæontographica, 46, 1899, p. 26.—Lindström, Kongl. Sven. Vet. Akad. Handl., 32, 1899, pp. 36, 72, 74, 75; Zittel-Eastman Textb. Pal., 1, 1900, p. 108; 2d. ed., 1913, p. 112.—Pocta, Syst. Sil. du Centre Boheme, 8, pt. 2, 1902, p. 300.—Kiär, Vid.-Selsk. Skrifter, Math.-naturw. Kl., No. 10, 1903, pp. 34, 54.—Grabau and Shimer, N. A. Index Fossils, 1, 1906, p. 98.

PLASMOPORA ASTRAFORMIS Calvin. See Plasmopora follis.

PLASMOPORA? DISCOIDEA Lindstrom. See Lyellia discoidea.

PLASMOPORA ELEGANS Hall. See Heliolites elegans.

Plasmopora follis Edwards and Haime.

?Porites? astraformis Owen, Geol. Expl. Iowa, Wisconsin, Illinois, 2d ed., 1844, p. 76, pl. 13, fig. 8.

Plasmopora follis Edwards and Haime, Mon. Polyp. Foss. d. Terr. Pal., 1851 (Arch. du Mus. d'Hist. Nat., 5), p. 223, pl. 16, fig. 3, 3a.—Milne-Edwards, Hist. Nat. d. Corall., 3, 1860, p. 240.—Roemer, Sil. Fauna West Tennessee, Breslau, 1860, p. 24, pl. 2, figs. 6, 6a.—Rominger, Geol. Surv. Michigan, 3, pt. 2, 1876, p. 14, pl. 3, fig. 2.—Davis, Kentucky Fossil Corals, Geol. Surv. Kentucky, pt. 2, 1885, pl. 1, figs. 9, 10.—Miller, N. A. Geol. Pal., 1889, p. 200, figs. 207.—Lindström, Kongl. Sven. Vet.-Akad. Handl., 32, No. 1, 1899, p. 82, pl. 7, figs. 19–20.—Lambe, Cont. Can. Pal., Geol. Surv. Canada, 4, pt. 1, 1899, p. 82, pl. 2, figs. 8, 8a.—Kiär, Vid.-Selsk. Skrifter, Math.-naturw. Kl., No. 10, 1903, p. 54.—Grabau and Shimer, N. A. Index Fossils, 1, 1906, p. fig. 157c, d.—Lambe, Cruise of the "Neptune," App. 4, 1906, p. 326.

Plasmopora astraformis Calvin, Amer. Geol., 12, 1893, p. 111.

Niagaran: Perry County, etc., Tennessee (Brownsport); Louisville, Kentucky (Louisville); St. Paul, Indiana (Laurel); Baie de Chaleurs, Quebec; Southampton Island; Hudson Bay, etc.

Observation.—Calvin adopts Owen's specific name "astraformis" for this species, but the original figure of Porites astraformis is not sufficient for recognition.

Plesiotype.—Cat. No. 52660, U.S.N.M. (Davis).

Plasmopora lambii Schuchert.

Plasmopora lambii Schuchert, Proc. U. S. Nat. Mus., 22, 1900, p. 154.

Mohawkian: Head of Frobisher Bay, Baffin Land.

Cotypes.—Cat. No. 28140, U.S.N.M.

Plasmopora petaliformis (Lonsdale).

Porites petaliformis Lonsdale, Murchison's Sil. Syst., 1839, p. 687, pl. 16, figs. 4, 4a.

Plasmopora petaliformis Edwards and Haime, Mon. d. Polyp. Foss. d. Terr. Pal., 1851 (Arch. du Mus. d'Hist. Nat., 5), p. 221; British Foss. Corals, 1855, p. 253, pl. 59, figs. 1, 1a–c.—Lambe, Contr. Canadian Pal., Geol. Surv. Canada, 4, pt. 1, 1899, p. 83, pl. 2, figs. 9, 9a.

Heliolites sparsus Billings, Canadian Nat. and Geol., n. s., 2, 1865, p. 428; Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 31.—Nicholson and Etheridge, Mon. Sil. Foss. Girvan Dist., 1880, p. 249.

Plasmopora petaliformis—Continued.

Silurian: England (Wenlock); Drummonds Island, Lake Huron (Niagaran); Two miles west of Chicotte River, Anticosti (Anticostian—Jupiter River—Chicotte); Baie des Chaleurs, Quebec.

PLASMOPORA PUELLA Lindstrom. See Lyellia puella.

PLATYAXUM (Davis) Foerste. Genotype: Pachypora frondosa Nicholson.

Platyaxum Davis, Kentucky Fossil Corals, Geol. Surv. Kentucky, pt. 2, 1885, expl. pl. 60.—Foerste, Bull. Sci. Denison Univ., 14, 1909, p. 105.

Platyaxum pegramense (Foerste).

Pachypora (Platyaxum) pegramensis Foerste, Bull. Sci. Lab. Denison Univ., 14, 1909, p. 103, pl. 3, fig. 57.

Alveolites pegramensis Foerste, Bull. Sci. Lab. Denison Univ., 14, 1909, p. 104.

Niagaran (Brownsport): Two miles west of Pegram, Tennessee.

Platyaxum planostiolatum (Foerste).

Pachypora (Platyaxum) planostiolata Foerste, Bull. Sci. Lab. Denison Univ., 14, 1909, p. 106, pl. 3, fig. 55.

Niagaran (Brownsport): Two miles west of Pegram, Tennessee.

Platyaxum platys Foerste.

Platyaxum platys Foerste, Jour. Geol., 11, 1903, p. 713.

Pachypora (Platyaxum) platys Foerste, Bull. Sci. Lab. Denison Univ., 14, 1909, p. 104, pl. 1, fig. 16a–c.

Niagaran (Brownsport): Brownsport Furnace and near Linden, Tennessee.

PLATYCERAS Conrad. Genotype: P. dumosum Conrad.

Platyceras Conrad, 4th Ann. Rep. New York Geol. Surv., 1840, p. 205.—Woodward, Man. Mollusca, pt. 1, 1851, p. 153.—Hall, 12th Rep. New York State Cab. Nat. Hist., 1859, pp. 15, 16; Pal. New York, 3, 1859, pp. 308, 309, p. 468.—Meek and Worthen, Proc. Acad. Nat. Sci. Philadelphia, 1866, pp. 262, 263; Geol. Surv. Illinois, 3, 1868, pp. 384, 387; Proc. Acad. Nat. Sci. Philadelphia, 1868, p. 331; Geol. Surv. Illinois, 5, 1873, p. 334.—Nicholson, Rep. Pal. Prov. Ontario, pt. 1, 1874, p. 115.—Wetherby, Jour. Cincinnati Soc. Nat. Hist., 2, 1879, p. 6, footnote.—Lindstrom, Kongl. Sven. Vet.-Akad. Handl., 19, No. 6, 1881, p. 59.—Zittel, Handb. Pal., 2, 1882, p. 217.—Œhlert, Bull. Soc. Geol. France, 3d ser., 11, 1883, p. 603.—Koninck, Ann. d. Mus., Royal d'Hist. Nat. de Belgique, 8, 1883, p. 169.—Walcott, Mon. U. S. Geol. Surv., 8, 1884, p. 182.—Keyes, Amer. Nat., 22, 1888, p. 925; Amer. Jour. Sci., 3d ser., 36, 1888, p. 269; Proc. Amer. Phil. Soc., 25, 1888, p. 231.—Nettelroth, Kentucky Foss. Shells, Geol. Surv. Kentucky, 1889, p. 160.—Miller, N. A. Geol. Pal., 1889, p. 415.—Keyes, Amer. Geol., 6, 1890, pp. 6–9; Proc. Iowa Acad. Sci., 1, pt. 2, 1892, p. 24; Amer. Geol., 10, 1892, p. 273.—Frech, Zeits. d. d. geol. Gesell., 46, 1894, p. 469.—Koken, Die Leitfossilien, Leipzig, 1896, pp. 106, 128, 133, fig. 115.—Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 1068.—Koken, Bull. de l'Acad. Imp. Sci. St. Petersburg, 7, 1897, p. 195.—Grabau, Bull. Buffalo Soc. Nat. Sci., 6, 1899, p. 271.—Girty, Mon. U. S. Geol. Surv., 32, pt. 2, 1899, p. 574, pl. 66, figs. 12a–c, 11a–d.—Pilsbry, Zittel-Eastman Textb. Pal., 1, 1900, p. 461.—Grabau, Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 211; Bull. New York State Mus., 45, 1901, p. 211.—Girty, U. S. Geol. Surv., Prof. Pap. 16, 1903, p. 310.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 680.—Dall, Zittel-Eastman Textb. Pal., 2d ed., 1913, p. 54.

PLATYCERAS—Continued.

Acroculia Phillips, Pal. Foss. Cornwall, Devon and W. Somerset, 1841, p. 93.—Hall, 12th Rep. New York State Cab. Nat. Hist., 1859, p. 77.—Œhlert, Bull. Soc. Geol. France, 3d ser., 11, 1883, p. 602.

Platyceras angulatum (Hall).

Acroculia angulata Hall, Pal. New York, 2, 1852, p. 289, pl. 60, figs. 4a–d.

Platyceras angulatum Grabau, Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 211, fig. 140; Bull. New York State Mus., 45, 1901, p. 211, fig. 140.

Clinton (Rochester): Lockport, New York.

PLATYCERAS BROWNSPORTENSIS Foerste. See Diaphorostoma brownsportense.

PLATYCERAS CAMPANULATUM Winchell and Marcy. See Diaphorostoma campanulatum.

Platyceras? columbianum Weller.

Platyceras? columbiana Weller, Geol. Surv. New Jersey, Pal., 3, 1903, p. 131, pl. 4, figs. 7, 8.

Canadian (Beekmantown): Columbia, New Jersey.

Platyceras compactum Whiteaves.

Platyceras compactum Whiteaves, Geol. Surv. Canada, Ann. Rep., n. s., 14, App. F, 1904, p. 52; Geol. Surv. Canada, Pal. Foss., 3, pt. 4, 1906, p. 260, pl. 29, fig. 6.

Niagaran: Ekwan River, Canada.

PLATYCERAS (DIAPHOROSTOMA) CORNUTUM Hisinger. See Diaphorostoma niagarense.

Platyceras depressum Ulrich and Scofield.

Platyceras depressum Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 1069, pl. 61, figs. 55, 56.

Black River (Decorah): Six miles south of Cannon Falls, Minnesota.

Holotype.—Cat. No. 45954, U.S.N.M.

Platyceras ellesmerelandi Holtedahl.

Platyceras ellesmerelandi Holtedahl, 2d Arct. Exp. "Fram," 1898–1902, No. 32, 1914, p. 32, pl. 8, fig. 20.

Helderbergian (Lower beds): Southwestern Ellesmereland, Arctic America.

PLATYCERAS HOYTI Walcott. See Pelagiella hoyti.

Platyceras laciniosum Ringueberg.

Platyceras laciniosum Ringueberg, Buffalo Soc. Nat. Hist., 5, 1886, p. 14, pl. 2, fig. 1.

Clinton (Rochester): Lockport, New York.

Platyceras? membranaceum Ringueberg.

Platyceras membranaceum Ringueberg, Buffalo Soc. Nat. Hist., Bull. 5, 1886, p. 15, pl. 2, fig. 3.

Clinton (Rochester): Lockport, New York.

PLATYCERAS MINUTISSIMUM Walcott. See Pelagiella minutissima.

Platyceras naticoides Etheridge.

Platyceras naticoides Etheridge, Quart. Jour. Geol. Soc. London, 34, 1878, p. 603, pl. 27, figs. 4, 4a.

Niagaran: Bessels Bay, Arctic America.

Platyceras niagarense (Hall).

Acroculia niagarensis Hall, Pal. New York, 2, 1852, p. 288, pl. 60, fig. 3.—Roemer, Sil. Fauna West. Tennessee, Breslau, 1860, p. 76, pl. 5, fig. 16.

Platyceras niagarensis Hall, 20th Rep. New York State Cab. Hist., 1868, p. 341; rev. ed., 1870, p. 390.—Grabau, Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 211, fig. 139; Bull. New York State Mus., 45, 1901, p. 211, fig. 139; Amer. Nat., 36, 1902, p. 939.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 680, fig. 954.

Niagaran: Lockport, Rochester, etc., New York; Ontario (Rochester); West Tennessee (Brownsport); etc.

PLATYCERAS NIAGARENSE var. CLINTONENSE Foerste. See Diaphorostoma niagarense clintonense.

PLATYCERAS (PLATYSTOMA) NIAGARENSIS Foerste. See Diaphorostoma niagarense.

Platyceras proclive Ringueberg.

Platyceras proclive Ringeberg, Buffalo Soc. Nat. Hist., Bull. 5, 1886, p. 14, pl. 2, fig. 2.

Clinton (Rochester): Lockport, New York.

Observation.—Apparently a Crania.

Platyceras pronum Foerste.

Platyceras pronum Foerste, Bull. Sci. Lab. Denison Univ., 14, 1909, p. 65, pl. 3, fig. 40.

Clinton (Osgood): Clifton, Tennessee.

Platyceras senex (Winchell and Marcy).

Porcellia senex Winchell and Marcy, Mem. Boston Soc. Nat. Hist., 1, 1865, p. 111, pl. 3, fig. 6.

Platyceras senex Miller, N. A. Geol. Pal., 1889, p. 417 (gen. ref.).

Niagaran (Racine): Chicago, Illinois.

Platyceras tenuiliratum Hall.

Platyceras tenuiliratum Hall, Pal. New York, 3, 1859, p. 317, pl. 48, figs. 1-5; pl. 49, figs. 6a, b.—Maynard, Maryland Geol. Surv., Lower Dev., 1913, p. 476, pl. 85, figs. 1, 2.

Helderbergian: Albany County, New York (New Scotland); Cash Valley, Maryland (Keyser).

Platyceras unguiforme Hall.

Platyceras unguiforme Hall, Pal. New York, 3, 1859, p. 322, pl. 59, figs. 1-4.—Nettelroth, Kentucky Foss. Shells, Geol. Surv. Kentucky, 1889, p. 168.

Helderbergian (New Scotland): Albany and Schoharie Counties, New York.

?Niagaran (Louisville): Louisville, Kentucky (Nettelroth).

Plesiotype.—Cat. No. 51342, U.S.N.M. (Nettelroth).

Platyceras vetulum Sardeson.

Platyceras vetulum Sardeson, Bull. Minnesota Soc. Nat. Sci., 4, 1896, p. 76, pl. 4, fig. 1.

St. Peter: South St. Paul, Minnesota.

Platyceras(?) wisconsinense Ulrich and Scofield.

Platyceras(?) wisconsinensis Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 1068, pl. 61, figs. 49-54.

Black River (Platteville): Beloit, Wisconsin.

Cotypes.—Cat. No. 45955, U.S.N.M.

PLATYCOLPUS Raymond. Type: Bathyurus capax Billings.
Platycolpus Raymond, Bull. Victoria Memorial Mus., 1, 1913, p. 63.

Platycolpus affinis (Billings).
Dikelocephalus affinis Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 197, figs. 183a, b.
Dicellocephalus affinis Matthew, Trans. Royal Soc. Canada, 10, sec. 4, 1893, p. 11, footnote.
Platycolpus affinis Walcott, Smiths. Misc. Coll., 57, No. 13, 1914, p. 349 (gen. ref.).
Ozarkian? (Levis—erratics): Point Levis, Quebec.

Platycolpus barabuensis (Whitfield).
Dicellocephalus Barabuensis Whitfield, Ann. Rep. for 1877, Wisconsin Geol. Surv., 1878, p. 63.—Chamberlin, Geol. Wisconsin, 1, 1883, p. 141, fig.
Dikelocephalus Barabuensis Whitfield, Geol. Wisconsin, 4, 1882, p. 201, pl. 4, figs. 6–9.
Platycolpus barabuensis Raymond, Bull. Victoria Memorial Mus., 1, 1913, p. 64.
Ozarkian (Mendota): East of Baraboo, Wisconsin.

Platycolpus capax (Billings).
Bathyurus capax Billings, Canadian Nat. Geol., 5, 1860, p. 318, fig. 20; Geol. Canada, Geol. Surv. Canada, 1863, p. 238, fig. 271a (fig. only); Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 409, fig. 389.
Platycolpus capax Raymond, Bull. Victoria Memorial Mus., 1, 1913, p. 63, pl. 7, figs. 20 and 21.
Ozarkian? (Levis—erratics): Point Levis, Quebec.

Platycolpus dubius (Billings).
Bathyurus dubius Billings, Canadian Nat. Geol., 5, 1860, p. 319, fig. 21; Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 410, fig. 390.
Platycolpus dubius Raymond, Bull. Victoria Memorial Mus., 1, 1913, p. 64.
Ozarkian or Canadian: Point Levis, Quebec (Levis—erratics); Cow Head, Newfoundland.

Platycolpus eatoni (Whitfield).
Dikelocephalus eatoni Whitfield, Ann. Rep. Geol. Surv. Wisconsin for 1877, 1878, p. 65; Geol. Wisconsin, 4, 1882, p. 202, pl. 4, figs. 11–17; pl. 10, figs. 4, 5.
Platycolpus eatoni Raymond, Bull. Victoria Memorial Mus., 1, 1913, p. 63.
Ozarkian (Mendota): Baraboo, Wisconsin.

PLATYCRINITES Miller. See Platycrinus Miller.

PLATYCRINITES ANN DIXONI Troost. See Cococrinus bacca.

PLATYCRINUS Miller. Genotype: P. lævis Miller.
Platycrinites Miller, Nat. Hist. Crin., 1821, p. 15, 74.—Goldfuss, Petrefacta, 1826, p. 188.—Fischer de Waldheim, Oryct. Gouv. de Moscou, 1830, p. 151.—Goldfuss, Nova Acta Physico Med., Acad. Caes. Leop.-Carol., 19, 1839, p. 343.—Austin and Austin, Mono. Recent and Fossil Crin., 1843, p. 6; Ann. Mag. Nat. Hist., 11, 1843, p. 199.—Goldfuss, Petrefacta, 2d ed., pt. 1, 1862, p. 175.
Platycrinus Agassiz, Ann. Nat. Hist., 1, 1838, p. 447.—McCoy, Syn. Char. Carb. Foss. Ireland, 1844, p. 175.—Koninck, Desc. Animaux Fossiles, Leige, 1842, p. 41.—Austin, Quart. Jour. Geol. Soc. London, 4, 1848, p. 291.—D'Orbigny, Prodr. de Pal., 1, 1849, p. 103.—McCoy, British Pal. Rocks Foss., 1854, p. 118.—Koninck and Le Hon, Mem. l'Acad. Royale Sci., 28, 1854, p. 155, fig.—Pictet, Traite de Pal., 2d ed., 4, 1857, p. 330.—Hall, Rep. Geol. Surv. Iowa, 1,

PLATYCRINUS—Continued.

pt. 2, 1858, pp. 525, 526, fig. 55.—White, Boston Jour. Nat. Hist., 7, 1863, p. 489, footnote; pp. 491, 493, 495.—Meek and Worthen, Proc. Acad. Nat. Sci. Philadelphia, 1865, pp. 160, 161; Geol. Surv. Illinois, 2, 1866, p. 170, 172.—Beyrich, Ann. Mag. Nat. Hist., 4th ser., 7, 1871, p. 400, 401, fig.—Meek and Worthen, Geol. Surv. Illinois, 5, 1873, p. 329.—Austin, Ann. Mag. Nat. Hist., 4th ser., 16, 1875, p. 90.—Wachsmuth and Springer, Proc. Acad. Nat. Sci. Philadelphia, 1878, p. 243; ibid., 1881, p. 240; ibid., 1887, p. 93; ibid., 1888, p. 342.—Zittel, Handb. Pal., 1, 1879, p. 364.—Etheridge and Carpenter, Ann. Mag. Nat. Hist., 5th ser., 7, 1881, p. 294.—Miller, N. A. Geol. Pal., 1889, p. 270.—Grabau, Bull. Buffalo Soc. Nat. Sci., 6, 1899, p. 144.—Bather, Treatise on Zool., pt. 3, Echinoderma, London, 1900, p. 156, 157, fig. 71, 1-3.—Weller, Bull. Chicago Acad. Sci., Nat. Hist. Surv., 4, pt. 1, 1900, p. 139, fig. 51.—Springer, Zittel-Eastman Textb. Pal., 2d ed., 1913, p. 199.

Platycrinus augusta Slocom.

Platycrinus augusta Slocom, Field Columbian Mus., Geol. Ser., 2, 1908 (10, 292 pl. 86, figs. 5-7).

Niagaran (Racine): Drainage Canal near Lemont, Illinois.

Platycrinus corporiculus Ringueberg.

Platycrinus corporiculus Ringueberg, Bull. Buffalo Soc. Nat. Sci., 5, 1886, p. 12 pl. 1, fig. 9.

Clinton (Rochester): Lockport, New York.

Platycrinus? dubius Weller.

Platycrinus? dubius Weller, Bull. Chicago Acad. Sci. Nat. Hist. Surv., 4, pt. 1 1900, p. 140, pl. 14, fig. 4.

Niagaran (Racine): Bridgeport, Illinois.

PLATYCRINUS PARVUS Hall. See Cordylocrinus plumosus.

PLATYCRINUS PLUMOSUS Hall. See Cordylocrinus plumosus.

PLATYCRINUS PRÆMATURUS Hall and Whitfield. See Marsipocrinus præmaturus.

Platycrinus siluricus Hall.

Platycrinus siluricus Hall, Trans. Albany Inst., 10, 1883, p. 65 (adv. sheets, 1879, p. 9); 11th Ann. Rep. Indiana Dep. Geol. Nat. Hist., 1882, p. 256, pl. 15, fig. 15.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 690, figs.

Niagaran (Waldron): Waldron, Indiana.

PLATYCRINUS TENNESSEENSIS Roemer. See Marsipocrinus tennesseensis.

PLATYCYSTIS Bather. See Platycystites Miller.

PLATYCYSTITES Miller. Genotype: P. faberi Miller.

Platycystites Miller, N. A. Geol. Pal., 1889, p. 272.

Platycystis Bather, Treatise on Zool., pt. 3, Echinoderma, 1900, p. 51.

Platycystites faberi Miller.

Platycystites faberi Miller, N. A. Geol. Pal., 1889, p. 272, fig. 398.—Bather, Treatise on Zool., pt. 3, 1900, Echinoderma, p. 51; Trans. Roy. Soc. Edinburgh, 49, pt. 2, 1913, p. 371, fig. 5.

Chazyan (Ottosee) (Silurian in error): Southwestern Virginia.

Plastotype.—Cat. No. 35396, U.S.N.M.

PLATYMERELLA Foerste. Genotype: P. manniensis Foerste.

Platymerella Foerste, Bull. Sci. Lab. Denison Univ., 14, 1909, p. 71.

Platymerella manniensis Foerste.
Platymerella manniensis Foerste, Bull. Sci. Lab. Denison Univ., 14, 1909, p. 70, pl. 1, fig. 1A–D.
Upper Medinan (Brassfield): Near Riverside, Cedar Point, etc., Tennessee.

PLATYMETOPUS Angelin. See Amphilichas Raymond.

PLATYNOTUS Reed. See Arctinurus Castelnau.

PLATYNOTUS TRENTONENSIS Hall. See Amphilichas halli and A. trentonensis.

PLATYOSTOMA Conrad. See Diaphorostoma Fischer.

PLATYOSTOMA NIAGARENSIS var. TRIGONOSTOMA Meek. See Diaphorostoma trigonostoma.

PLATYSCHISMA McCoy. Genotype: Trochus helicites Sowerby.
Platyschisma McCoy, Syn. Carb. Foss. Ireland, 1844, p. 388.—Dall, Zittel-Eastman Textb. Pal., 2d ed., 1913, p. 527.

Platyschisma helicites (Sowerby).
Trochus helicites Sowerby, Sil. Syst., 1839, p. 603, pl. 3, figs. 1e and 5.
Platyschisma helicites Etheridge, Foss. British Isl., 1, 1888, Paleozoic, p. 114.—Williams, Proc. U. S. Nat. Mus., 45, 1913, p. 348, pl. 31, figs. 15, 16, 18.
Silurian: England; Hersey Cove, Washington County, Maine (Pembroke).
Plesiotype.—Cat. No. 58977, U.S.N.M.

PLATYSTROPHIA King. Genotype: Terebratulites biforata Schlotheim.
Platystrophia King, Mon. Permian Fossils of England, Pal. Soc., 1850, p. 116.—Zittel, Handb. Pal., 1, 1880, p. 675.—Waagen, Mem. Geol. Surv. India, Pal. Indica, 13th ser., 1, 1884, p. 549.—Hall, Geol. Soc. Amer., 1, 1889, pp. 19, 20.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 200.—Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 454.—Hall and Clarke, 11th Ann. Rep. New York State Geol., 1894, p. 268.—Koken, Die Leitfossilien, Leipzig, 1896, p. 235, fig. 195, 1.2.—Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 308.—Wysogorski, Zeit. d. d. geol. Gesell., 52, 1900, p. 234.—Cumings and Mauck, Amer. Jour. Sci., 4th ser., 14, 1902, p. 9.—Cumings, Amer. Jour. Sci., 4th ser., 15, 1903, p. 1.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 257.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 891.—Schuchert, Zittel-Eastman Textb. Pal., 1913, p. 381.

Platystrophia acuminata (James).
Orthis (Platystrophia) acuminata James, Palæontologist, 1, 1878, p. 7.
Platystrophia acuminata Foerste, Bull. Sci. Lab. Denison Univ., 16, 1910, pl. 6, fig. 13.
Maysville (Mount Auburn): Cincinnati, Ohio, and vicinity.

Platystrophia acutilirata (Conrad).
Delthyris acutilirata Conrad, Jour. Acad. Nat. Sci. Philadelphia, 8, 1842, p. 260, pl. 14, fig. 15.
Orthis (Platystrophia) acutilirata Meek, Pal. Ohio, 1, 1873, p. 119, pl. 10, fig. 5.
Orthis biforata var. acutilirata White, 2d Ann. Rep. Indiana Bur. of Stat. and Geol., 1880, p. 487, pl. 2, figs. 5–9; 10th Rep. State Geol. Indiana, 1881, p. 119, pl. 2, figs. 5–9.
Orthis acutilirata Miller, Cincinnati Quart. Jour. Sci., 2, 1875, p. 28.
Orthis (Platystrophia) biforata var. acutilirata Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 508, figs.

Platystrophia acutilirata—Continued.

Platystrophia acutilirata Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 223.—Foerste, Amer. Geol., 31, 1903, p. 340 (loc. occ.).—Cumings, Amer. Jour. Sci., 4th ser., 15, 1903, p. 32, fig. 17; p. 33, 35, fig. 18; p. 36, fig. 19; p. 48, fig. 25; p. 122, fig. 26, 11, 12, 13.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 258, fig. 308e–i.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 912, pl. 35, figs. 3–3d.—Foerste, Bull. Sci. Lab. Denison Univ., 16, 1910, p. 65, pl. 3, figs. 6, 7, 8a–b; pl. 4, fig. 9.

Platystrophia acutilirata senex Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 913, pl. 35, fig. 4 (not 4a–c).

?Spirifer shephardi Castelnau, Essai Syst. Sil. Amer. Sept., 1843, p. 42, pl. 14, fig. 15.

Richmond: Richmond, etc., Indiana; Oxford, Ohio (Whitewater); Wilmington, Illinois (Fernvale); Delafield, Wisconsin (Maquoketa).

Plesiotypes.—Cat. No. 41167, U.S.N.M. (Cumings).

PLATYSTROPHIA ACUTILIRATA INFLATA Foerste. See Platystrophia acutilirata senex.

Platystrophia acutilirata prolongata Foerste.

Platystrophia acutilirata prolongata Foerste, Bull. Sci. Lab. Denison Univ., 16, 1910, p. 67, pl. 3, figs. 8a, b.

Richmond (Whitewater): Richmond, Indiana, etc.

Platystrophia acutilirata senex Cumings.

Orthis inflata? James, Cat. Low. Sil. Foss. Cincinnati Group, 1871, p. 10 (nom nud.).

Platystrophia acutilirata var. senex (part) Cumings, 32d Ann. Rep. Dep. Ge Nat. Res. Indiana, 1908, p. 913, pl. 35, figs. 4a–c (not fig. 4=P. acutilirata).

Platystrophia acutilirata inflata Foerste, Bull. Sci. Lab. Denison Univ., 16, 191 pl. 4, fig. 8.

Richmond (Whitewater): Richmond, Indiana.

Platystrophia annieana Foerste.

Orthis annieana James, Cat. Low. Sil. Fossils Cincinnati Group, 1871, p. 10 (nom. nud.).

Platystrophia annieana Foerste, Bull. Sci. Lab. Denison Univ., 16, 1910, pl. 6, fig. 14.

Richmond (Waynesville): Blanchester, Ohio.

Platystrophia biforata (Schlotheim).

Terebratulites biforatus Schlotheim, Petrefactenkunde, 1820, p. 265.

Delthyris brachynota Hall, Geol. New York, Rep. 4th Dist., 1843, p. 70, fig. 6.—Owen, Amer. Jour. Sci. Arts, 48, 1845, p. 303, fig. 6.

Orthis and Delthyris Owen, Geol. Expl. Iowa, Wisconsin, Illinois, 1844, pl. 15, figs. 3, 7.

Delthyris lynx Hall (part; not Eichwald), Pal. New York, 1, 1847, p. 133, pl. 32D, fig. 1.

Spirifer biforata var. lynx Hall, ibid., 2, 1852, p. 65, pl. 22, fig. 1.

Orthis biforatus Billings, Canadian Nat. Geol., 1, 1856, p. 206, figs. 6–10.—Davidson, Mon. British Sil. Brach., Pal. Soc., 1871, p. 268, pl. 38, figs. 11–25.—Nicholson and Hinde, Canadian Jour., 14, 1874, p. 158.—White, Rep. U. S. Geogr. Geol. Surv. west 100th Meridian, 4, 1874, p. 74, pl. 4, fig. 9.—Nettelroth, Kentucky Fossil Shells, Mem. Kentucky Geol. Surv., 1889, p. 35, pl. 29, figs. 18–22.—Foerste, Proc. Boston Soc. Nat. Hist., 24, 1889, p. 312.—Dennis, Proc. Indiana Acad. Sci., 1899, p. 289.

Platystrophia biforata—Continued.

Orthis lynx Billings, Geol. Canada, 1863, p. 167, fig. 149.—Miller (part), Cincinnati Quart. Jour. Sci., 2, 1875, p. 25.

Orthis (Platystrophia) biforata Meek, Pal. Ohio, 1, 1873, p. 112.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 508, figs.

Orthis (Platystrophia) biforata var. lynx Hall, 2d Ann. Rep. New York State Geol., 1883, pl. 35, figs. 11–14 (not figs. 9, 10, 15 of pl. 35 and fig. 30, pl. 34).

Platystrophia lynx Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pp. 202, 223, pl. 5B, fig. 10.—Keyes, Geol. Surv. Missouri, 5, 1895, p. 64, pl. 39, fig. 5.

Platystrophia biforata Hall, 36th Rep. New York State Mus., 1884, p. 75, pl. 3, fig. 2.—Beecher, Amer. Jour. Sci. Arts, 3d ser., 42, 1891, p. 55, figs. 2a, b.—Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 455, pl. 33, figs. 51–54.—Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 309.—Whiteaves, Geol. Surv. Canada, Pal. Foss., 3, pt. 3, 1897, p. 177.—Schuchert, Proc. U. S. Nat. Mus., 22, 1900, p. 158.—Ruedemann, Bull. New York State Mus., 49, for 1901, 1902, p. 25.—Cumings, Amer. Jour. Sci., 4th ser., 15, 1903, p. 18; p. 41; p. 42, figs. 21, 22, 23; p. 122, fig. 26; 14, fig. 27.—Weller, Geol. Surv. New Jersey, Pal., 3, 1903, p. 153, pl. 9, figs. 25–28.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 258.

Ordovician-Silurian: Various North American localities.

Plesiotype.—Cat. No. 51348, U.S.N.M. (Nettelroth).

Observation.—The above references are to various undetermined species of Platystrophia.

PLATYSTROPHIA BIFORATA var. CRASSA Winchell and Schuchert. See Platystrophia crassa.

PLATYSTROPHIA BIFORATA var. LATICOSTA Hall and Clarke. See Platystrophia laticosta.

PLATYSTROPHIA BIFORATA var. LYNX Hall and Clarke. See Platystrophia lynx.

Platystrophia clarksvillensis Foerste.

Platystrophia clarksvillensis Foerste, Bull. Sci. Lab. Denison Univ., 16, 1910, p. 65, pl. 3, figs. 4, 3.

Richmond (Waynesville and Liberty): Fort Ancient, Clarksville, etc., Ohio.

Platystrophia colbiensis Foerste.

Platystrophia colbiensis Foerste, Bull. Sci. Lab. Denison Univ., 16, 1910, p. 55, pl. 4, figs. 2A–B.

Platystrophia cf. colbiensis Foerste, Jour. Cincinnati Soc. Nat. Hist., 21, 1914, p. 131.

Trenton (Cynthiana): Between Colby and Winchester, Paris, Lexington, etc., Kentucky.

Platystrophia colbiensis mutata Foerste.

Platystrophia colbiensis-mutata Foerste, Bull. Sci. Lab. Denison Univ., 16, 1910, p. 56, pl. 4, figs. 3a–b.

Trenton (Cynthiana): Pleasant Valley and near Winchester, Kentucky.

Platystrophia colbiensis precursor Foerste.

Platystrophia colbiensis precursor Foerste, Bull. Sci. Lab. Denison Univ., 16, 1910, p. 57, pl. 4, fig. 1.

Trenton (Cynthiana): Between Colby and Winchester, and also between Millersburg and Pleasant Valley, Kentucky.

PLATYSTROPHIA COSTATA Cumings. See Platystrophia crassa.

Platystrophia crassa (James).

Orthis (Platystrophia) dentata?? Meek (not Pander), Pal. Ohio, 1, 1873, p. 117, pl. 10, fig. 3.

Orthis dentata Miller, Cincinnati Quart. Jour. Sci., 1875, p. 27, 2.

Orthis (Platystrophia) biforata dentata Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 508, figs.

Orthis costata Miller (not Pander), Cincinnati Quart. Jour. Sci., 2, 1875, p. 33.

Platystrophia costata Cumings and Mauck, Amer. Jour. Sci., 4th ser., 14, 1902, p. 14, footnote.—Cumings, ibid., 15, 1903, p. 38; p. 122, figs. 26, 27; 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 914, pl. 35, figs. 6, 6a.

Orthis centrosa Miller, N. A. Geol. Pal., 1889, p. 356.

Orthis (Platystrophia) crassa James, Cincinnati Quart. Jour. Sci., 1, 1874, p. 20.

Platystrophia biforata var. crassa Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 458, pl. 33, figs. 55, 56.—Whiteaves, Pal. Foss., 3, pt. 3, Geol. Surv. Canada, 1897, p. 178.

Platystrophia crassa Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 223.—Grabau and Shimer, N. A. Index Fossils 1, 1907, p. 258, figs. 308a–b.—Foerste, Bull. Sci. Lab. Denison Univ., 16, 1910, p. 59, pl. 4, figs. 5a, b.

Maysville (Fairmount-Corryville): Cincinnati, Ohio, and vicinity.

Platystrophia cypha (James).

Orthis (Platystrophia) cypha James, Cincinnati Quart. Jour. Sci., 1, 1874, p. 26.

Platystrophia cypha Cumings, Amer. Jour. Sci., 4th ser., 15, 1903, p. 39, footnote.—Foerste, Amer. Geol., 31, 1903, p. 341; Bull. Sci. Lab. Denison Univ., 16, 1910, p. 61, pl. 4, fig. 10a–b; pl. 5, fig. 11; pl. 4, fig. 12; Ohio Nat., 12, 1912, p. 453, pl. 22, fig. 5.

Platystrophia lynx var. cypha Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 917.

Maysville (Bellevue and Corryville): Warren County, etc., Ohio; Madison, Vevay, etc., Indiana.

Platystrophia cypha conradi Foerste.

Platystrophia cypha conradi Foerste, Bull. Sci. Lab. Denison Univ., 16, 1910, pl. 4, fig. 7; Ohio Nat., 12, 1912, p. 453, pl. 22, fig. 3.

Platystrophia cypha var. Foerste, Bull. Sci. Lab. Denison Univ., 16, 1910, pl. 3, fig. 5.

Richmond (Arnheim): Near Smithville and Summit, Kentucky.

Platystrophia cypha versaillesensis Foerste.

Platystrophia cypha versaillesensis Foerste, Bull. Sci. Lab. Denison Univ., 16, 1910, pl. 4, fig. 11, 13.

Richmond: Versaillès, Indiana (Liberty); north of Hogan Creek, Indiana (Waynesville).

Platystrophia daytonensis (Foerste).

Orthis biforata var. lynx forma daytonensis Foerste, Bull. Sci. Lab. Denison Univ., 1, 1885, p. 81, pl. 13, figs. 1–8.

Orthis (Platystrophia) biforata (part) Foerste, Geol. Surv. Ohio, 7, 1895, p. 579, pl. 25, fig. 8.

Platystrophia daytonensis Savage, Bull. Geol. Surv. Illinois, 23, 1913, p. 76, pl. 4, fig. 8.

Upper Medinan: Dayton, Ohio; Hanover, Indiana; Cumberland Gap, Tennessee; Collinsville, Alabama (Brassfield); near Edgewood and Louisiana, Missouri; Thebes, Illinois (Edgewood).

PLATYSTROPHIA FLABELLA Hall. See Orthis flabellites.

PLATYSTROPHIA INFLATA James. See Orthis acutilirata senex.

Platystrophia laticosta (Meek).

Orthis laticostata James, Cat. Sil. Foss. Cincinnati Group, 1871, p. 10 (nom. nud.).—Miller, Cincinnati Quart. Jour. Sci., 2, 1875, p. 27.

Orthis (Platystrophia) laticosta Meek, Pal. Ohio, 1, 1873, p. 116, pl. 10, fig. 4.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 918, pl. 35, figs. 2, 2b.

Orthis (Platystrophia) biforata var. laticosta Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 509, figs.

Platystrophia biforata var. laticosta Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 223, pl. 5B, figs. 5–9.

Platystrophia lynx var. laticosta Cumings and Mauck, Amer. Jour. Sci., 4th ser., 14, 1902, p. 14.—Cumings, ibid., 15, 1903, p. 28, footnote p. 29, fig. 15a–e.

Platystrophia laticosta Cumings, Amer. Jour. Sci., 4th ser., 15, p. 30, fig. 16a–c, p. 122, fig. 26, 7, fig. 27.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 258.—Foerste, Bull. Sci. Lab. Denison Univ., 16, 1910, pl. 3, figs. 1a, b, 2.

Maysville (Fairmount-Corryville): Cincinnati, Ohio, and vicinity.

?Richmond (Waynesville): Waynesville, Ohio.

Platystrophia lynx (Eichwald).

?Terebratula lynx Eichwald, Skizze von Podolis, 1830, p. 202.

Delthyris lynx (part) Hall, Pal. New York, 1, 1847, p. 133, pl. 32D, fig. 1.—Rogers, Geol. Pennsylvania, 2, pt. 2, 1858, p. 820, fig. 616.

Orthis lynx Emmons, Amer. Geology, 1, pt. 2, 1855, p. 196, pl. 14, fig. 9a–p.—Hitchcock, Geol. Vermont, 1, 1862, p. 295, fig. 203.—Chapman, Canadian Jour., n. s., 7, 1862, p. 112, fig. 93; ibid., 8, 1863, p. 199, fig. 185; Expos. Min. and Geol. Canada, 1864, p. 115, fig. 93; p. 171, fig. 185.—Safford, Geol. Tennessee, 1869, p. 275, fig. 12, 13.—Miller, Cincinnati Jour. Sci., 2, 1875, p. 25.—Chamberlin, Geol. Wisconsin, 1, 1883, p. 155, fig.—Miller, N. A. Geol. Pal., 1889, p. 358, fig. 591.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 523, figs.

Orthis biforata Nicholson, Pal. Prov. Ontario, 1875, p. 16, fig. 5.

Orthis (Platystrophia) lynx Hall, 2d Ann. Rep. New York State Geol., 1883, pl. 34, fig. 30.

Platystrophia lynx Roemer, Leth. geog., 1, Leth. Pal., Atlas, 1876, pl. 4, figs. 7a, b.—Shaler, Mem. Geol. Surv. Kentucky, 3d Mem., 1876, p. 43.—Zittel, Handb. Pal., 1, Munich, 1880, p. 675, fig. 505.—Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 310.—Cumings and Mauck, Amer. Jour. Sci., 4th ser., 14, 1902, p. 9, pls. 2, 3.—Cumings, Amer. Jour. Sci., 4th ser., 15, 1903, p. 8, fig. 3; p. 10, fig. 4a–c; p. 12, fig. 5; p. 13; p. 18; p. 19, figs. 7a–d″; p. 20; p. 21, fig. 8; p. 22, fig. 9; p. 24, fig. 10; p. 25, fig. 11; p. 26, fig. 12; p. 27, fig. 13; p. 28, figs. 14, 27.—Foerste, Amer. Geol., 31, 1903, p. 334 (loc. occ.).

Middle and Upper Ordovician: Various localities in the United States and Canada.

Observation.—The above references are to various undetermined species of Platystrophia.

PLATYSTROPHIA LYNX Cumings. See Platystrophia moritura.

PLATYSTROPHIA LYNX Hall and Clarke. See Platystrophia biforata.

PLATYSTROPHIA LYNX var. CYPHA Cumings. See Platystrophia cypha.

PLATYSTROPHIA LYNX var. LATICOSTA Cumings. See Platystrophia laticosta.

PLATYSTROPHIA LYNX var. MORITURA Cumings. See Platystrophia moritura.

PLATYSTROPHIA LYNX var. PAUCIPLICATA Cumings. See Platystrophia pauciplicata.

Platystrophia moritura (Cumings).
Platystrophia lynx Cumings, Amer. Jour. Sci., 4th ser., 15, 1903, p. 24.
Platystrophia lynx var. moritura Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 920, pl. 35, fig. 5, 5a.
Richmond (Elkhorn): Near Richmond, Indiana.

Platystrophia morrowensis (James).
Orthis(?) morrowensis James, Cincinnati Quart. Jour. Sci., 1, 1874, p. 21.
Platystrophia morrowensis Foerste, Bull. Sci. Lab. Denison Univ., 16, 1910, p. 60, pl. 6, figs. 11a–e, 12a, b.
Maysville (Corryville): Morrow, Cincinnati, etc., Ohio.

PLATYSTROPHIA OCCIDENTALIS Hall. See Hebertella alveata.

Platystrophia pauciplicata (Cumings).
Platystrophia lynx var. pauciplicata Cumings, Amer. Jour. Sci., 4th ser., 15, 1903, p. 23, fig. 9 bis.
Maysville (Fairmount): Cincinnati, Ohio.

PLATYSTROPHIA PAUCIPLICATA Foerste. See Platystrophia unionensis.

Platystrophia ponderosa Foerste.
Platystrophia ponderosa Foerste, Bull. Sci. Lab. Denison Univ., 14, 1909, p. 225, pl. 4, fig. 14; Ohio Nat., 12, 1912, p. 453, pl. 22, fig. 11.
Maysville (McMillan) and Richmond (Arnheim, Waynesville): Cincinnati, Ohio, and neighboring localities in Ohio, Indiana, and Kentucky; central Tennessee; southwest Virginia, etc.

Platystrophia ponderosa auburnensis Foerste.
Platystrophia ponderosa auburnensis Foerste, Bull. Sci. Lab. Denison Univ., 14, 1909, p. 226, pl. 4, fig. 15.
Orthis (Platystrophia) biforata var. lynx Meek, Pal. Ohio, 1, 1873, p. 144, pl. 10, fig. 1.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 509, figs.
Platystrophia biforata var. lynx Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pp. 202, 223, pl. 5B, figs. 1–4.
Platystrophia lynx Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 258, fig. 308c–d, 309.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 914, pl. 35, figs. 1, 1g, 7, 7c.—Hayes and Ulrich, U. S. Geol. Surv., folio 95, illustr. sheet, 1903, figs. 21, 22.
Maysville (Mount Auburn): Cincinnati, Ohio, and vicinity.
Plesiotype.—Cat. No. 35408, U.S.N.M. (Hayes and Ulrich).

Platystrophia ponderosa stevensoni Grabau.
Platystrophia ponderosa var. stevensoni Grabau, Bull. Geol. Soc. Amer., 24, 1913, p. 453, pl. 12.
Cincinnatian (Bays): Big Walker Mountain, Virginia.
Observation.—In all probability the same as Orthorhynchula linneyi.

Platystrophia profundosulcata (Meek).
Orthis (Platystrophia) laticosta var. profundosulcata (James) Meek, Pal. Ohio, 1, 1873, p. 117, pl. 10, figs. 2a–d.
Platystrophia profundosulcata Foerste, Bull. Sci. Lab. Denison Univ., 16, 1910, p. 58, pl. 6, figs. 15a–c.
Maysville (Mount Hope, Fairmount): Cincinnati, Ohio, and vicinity.

Platystrophia regularis Shaler.
Platystrophia regularis Shaler, Bull. Mus. Comp. Zool., 4, 1865, p. 67.
Gamachian (Ellis Bay) and Anticostian (Gun River): Junction Cliff, etc., Anticosti.

Platystrophia reversata (Foerste).
Orthis biforata var. lynx forma reversata Foerste, Bull. Sci. Lab. Denison Univ., 1, 1885, p. 81, pl. 13, fig. 7.
Orthis (Platystrophia) biforata (part) Foerste, Geol. Ohio, 7, 1895, p. 579, pl. 25, fig. 7.
Upper Medinan (Brassfield): Dayton, Ohio.

PLATYSTROPHIA SUBQUADRATA Hall. See Dinorthis (Plæsiomys) subquadrata.

PLATYSTROPHIA TRICENARIA Hall. See Orthis tricenaria.

Platystrophia unicostata Cumings.
Platystrophia unicostata Cumings, Amer. Jour. Sci., 4th ser., 15, 1903, p. 31; p. 122, fig. 26, 8.—Foerste, Bull. Sci. Lab. Denison Univ., 16, 1910, pl. 4, fig. 6.
Maysville (Bellevue): Ohio County, Indiana.

Platystrophia unionensis Bassler (new name).
Platystrophia pauciplicata Foerste (not Cumings, 1903), Cincinnati Soc. Nat. Hist. Jour., 21, 1909, p. 25, pl. 1, fig. 15.
Clinton (West Union): West Union, Ohio.

Platystrophia wallowayi Foerste.
Platystrophia wallowayi Foerste, Ohio Nat., 12, 1912, p. 453, pl. 22, fig. 6.
Richmond (Arnheim): Walloway Creek, Marion County, Kentucky.

PLECTAMBONITES Pander. Genotype: P. planissima Pander.
Plectambonites Pander, Beitrage zur Geognosie des Russ. Reiches, 1830, p. 90, pl. 3, figs. 8, 16; pl. 28, fig. 19.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pp. 236, 295.—Winchell and Schuchert, Geol. Minnesota, 3, 1893, pp. 413.—Hall and Clarke, 11th Ann. Rep. New York State Geol., 1894, p. 290.—Sardeson, Amer. Geol., 19, 1897, p. 181.—Grabau, Bull. New York State Mus., 45, 1901, p. 182; Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 182.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 227.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, p. 892.

PLECTAMBONITES Œhlert. See Leptæna Dalman.

PLECTAMBONITES ARCA Shaler. See Stropheodonta (Brachyprion) leda.

Plectambonites centricarinatus Ruedemann.
Plectambonites centricarinatus Ruedemann, Bull. New York State Mus., 162, 1912, pl. 4, fig. 7.
Eden (Indian Ladder): Indian Ladder, Albany County, New York.

Plectambonites curdsvillensis Foerste.
Plectambonites curdsvillensis Foerste, Bull. Sci. Lab. Denison Univ., 1912, p. 122, pl. 10, figs. 15a, b.
Trenton (Curdsville): Glenn Creek Station, Woodford County, Kentucky.

Plectambonites gibbosus Winchell and Schuchert.
Plectambonites gibbosa Winchell and Schuchert, Amer. Geol., 9, 1892, p. 288; Geol. Minnesota, 3, 1893, p. 416, pl. 32, figs. 13–17.
Leptæna gibbosa Miller, N. A. Geol. Pal., 2d App., 1897, p. 761 (gen. ref.).
Trenton (Prosser): Mantorville, Old Concord, and near Cannon Falls, Minnesota.

Plectambonites glaber Shaler.
Plectambonites glabra Shaler, Bull. Mus. Comp. Zool., 1, 1865, p. 64.
Plectambonites glaber Shaler, Mem. Geol. Surv. Kentucky, 1, 1876, p. 29.
Leptæna glabra Foerste, Proc. Boston Soc. Nat. Hist., 24, 1889, p. 294.
Anticostian: Island of Anticosti.

Plectambonites minnesotensis (Sardeson).
Leptæna minnesotensis Sardeson, Minnesota Acad. Nat. Sci., 3, 1892, p. 329, pl. 4, figs. 24, 25.
Trenton (Prosser): Goodhue County, etc., Minnesota.

Plectambonites pisum Ruedemann.
Plectambonites pisum Reudemann, Bull. New York State Mus., 49, 1902, p. 19, pl. 1, figs. 8-20.—Bassler, Bull. Virginia Geol. Surv., 2a, 1909, pl. 3, figs. 17, 18.
Mohawkian: Rysedorph Hill and Moordener Kill, New York (Rysedorph); Pennsylvania, Maryland, and Virginia (Chambersburg).

Plectambonites plicatellus (Ulrich).
Leptæna plicatella Ulrich, Jour. Cincinnati Soc. Nat. Hist., 1, 1879, p. 15, pl. 7, fig. 12.
Plectambonites plicatella Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pl. 15d, figs. 34, 35.—Foerste, Bull. Sci. Lab. Denison Univ., 17, 1912, p. 122, pl. 1, figs. 8a, b.
Eden: Cincinnati, Ohio, and vicinity (Fulton); New York (Indian Ladder).

Plectambonites precosis (Sardeson).
Leptæna precosis Sardeson, Minnesota Acad. Nat. Sci., 3, 1892, p. 329, pl. 4, figs. 26–28.
Richmond (Maquoketa): Fillmore County, Minnesota.

Plectambonites productus Hall and Clarke.
Plectambonites producta Hall and Clarke, Pal. New York, 8, pt. 2, 1895, p. 360, pl. 84, figs. 23–25; 48th Rep. New York State Mus., 2, p. 354, pl. 6, figs. 11, 12; 14th Rep. State Geol. New York for 1894, p. 354, pl. 6, figs. 11, 12.
Niagaran: Yellow Springs, Ohio.

Plectambonites recedens (Sardeson).
Leptæna recedens Sardeson, Minnesota Acad. Nat. Sci., 3, 1892, p. 330, pl. 4, figs. 29–32; Amer. Geol., 19, 1897, p. 182.
Richmond (Maquoketa): Fillmore County, Minnesota.

PLECTAMBONITES RHOMBOIDALIS Keyes. See Leptæna rhomboidalis.

Plectambonites rugosus (Meek).
Leptæna rugosa James, Cat. Foss. Cincinnati Group, 1871.
Leptæna sericea var. rugosa Meek, Pal. Ohio, 1, pt. 2, 1873, pl. 5, figs. 3f, g, h.
Plectambonites rugosa Foerste, Bull. Sci. Lab. Denison Univ., 17, 1912, p. 123, pl. 1, figs. 7a–c; pl. 10, figs. 7a–d.
Leptaena aspera James, Cincinnati Quart. Jour. Sci., 1, 1874, p. 151.
Plectambonites sericeus var. asper Ruedemann, Bull. New York State Mus., 49, 1901, p. 18, pl. 1, figs. 6, 7; ibid., 8, p. 525.
Eden: Cincinnati, Ohio, and vicinity.

Plectambonites rugosus clarksvillensis Foerste.
Plectambonites rugosus clarksvillensis Foerste, Bull. Sci. Lab. Denison Univ., 17, 1912, p. 127.
Richmond (Waynesville and Liberty): Ohio, Indiana, and Kentucky.

Plectambonites saxeus (Sardeson).

Leptæna saxea Sardeson, Minnesota Acad. Nat. Sci., 3, 1892, p. 330, pl. 4, figs. 33-35.

Richmond (Maquoketa): Bristol, Minnesota.

Plectambonites sericeus (Sowerby).

Leptæna sericea Sowerby, Murchison's Sil. Sys., 1839, pl. 19, figs. 1, 2.—Hall, Pal. New York, 1, 1847, pp. 110, 287, pl. 31B, fig. 2; pl. 79, fig. 3; ibid., 2, 1852, p. 59, pl. 21, fig. 1.—Billings, Canadian Nat. Geol., 1, 1856, p. 41, fig. 2.—Rogers, Geol. Pennsylvania, 2, pt. 2, 1858, p. 818, fig. 599.—Emmons, Man. Geology, 1860, p. 99, fig. 88.—Hitchcock, Geol. Vermont, 1, 1861, p. 294, fig. 200.—Chapman, Canadian Jour., n. s., 7, 1862, p. 112, fig. 97; ibid., 8, 1863, p. 205, fig. 204.—Billings, Geol. Canada, 1863, p. 163, fig. 139.—Chapman, Expos. Min. Geol. Canada, 1864, p. 166, fig. 97; p. 177, fig. 204.—Safford, Geol. Tennessee, 1869, p. 275, fig. 1.—Davidson, Mon. British Sil. Brach., Pal. Soc., 1871, p. 323, pl. 48, figs. 10-19.—Meek, Pal. Ohio, 1, 1873, p. 70, pl. 5, fig. 3.—Miller, Cincinnati Quart. Jour. Sci., 2, 1875, p. 57.—?White, Wheeler's Expl. Surv. west of 100th Merid., 4, 1875, p. 70, pl. 4, fig. 7.—Kayser, Pal. Suppl., 3, 1876, p. 21, pl. 3, fig. 19.—Hall, 2d Ann. Rep. New York State Geol., 1883, pl. 46, figs. 25-29.—Chamberlin, Geol. Wisconsin, 1, 1883, p. 155, fig.—Hall, 35th Rep. New York State Mus. Nat. Hist., 1884, pl. 22, fig. 3.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 328, figs.—Miller, N. A. Geol. Pal., 1889, p. 348, fig. 570.—Foerste, Proc. Boston Soc. Nat. Hist., 24, 1889, p. 293.—Keyes, Geol. Surv. Missouri, 5, 1895, p. 75, pl. 39, fig. 9.—Kayser, Zeit. d. d. geol. Gesell., 49, 1897, p. 283.

Strophomena sericea Conrad, 3d Ann. Rep. Geol. Surv. New York, 1840, p. 201.—Emmons, Geol. New York, Rep. 2d Dist., 1842, p. 294.—Owen, Amer. Jour. Sci. and Arts, 47, 1844, p. 366, fig. 1, p. 369; Geol. Expl. Iowa, Wisconsin, Illinois, 2d ed., 1844, p. 84, pl. 17, fig. 5.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 199, pl. 11, figs. 6a-f.

Strophomena semiovalis Vanuxem, Geol. New York, Rep. 3d Dist., 1842, p. 47.

Plectambonites sericea Shaler, Mem. Surv. Kentucky, 1, 1876, p. 28.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pl. 15, figs. 25-29.—Winchell and Schuchert, Minnesota Geol. Surv., 3, 1893, p. 414, pl. 32, figs. 10-12.—Whiteaves, Pal. Foss., 3, pt. 3, 1897, p. 174.—Grabau, Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 183, fig. 89; Bull. New York State Mus., 45, 1901, p. 183, fig. 89.—Weller, Geol. Surv. New Jersey, Pal., 3, 1903, p. 149, pl. 9, figs. 14, 15; p. 216, pl. 16, figs. 2, 3.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 227, fig. 274a-b.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 922, pl. 36, figs. 1-1c.—Bassler, Bull. Virginia Geol. Surv., 2a, 1909, pl. 14, figs. 1, 2.

Plectambonites cf. sericeus Kindle and Breger, 28th Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1904, p. 431, pl. 2, fig. 22.

Plectambonites sericeus typus Ruedemann, Bull. New York State Mus., 162, 1912, pl. 4, figs. 3-6 (var. jugata suggested in case distinct).

Mohawkian and Cincinnatian: England; various localities in the United States and Canada.

Observation.—The above citations undoubtedly refer to several distinct species.

Plesiotypes.—Cat. No. 8552, U.S.N.M. (White).

PLECTAMBONITES SERICEUS var. ASPER Ruedemann. See Plectambonites rugosus.

PLECTAMBONITES SERICEUS TYPUS Ruedemann. See Plectambonites sericeus.

PLECTAMBONITES TENERA Shaler. See Plectambonites transversalis.

Plectambonites tennesseensis Foerste.

Plectambonites tennesseensis Foerste, Jour. Geol., 11, 1903, p. 708; Bull. Sci. Lab. Denison Univ., 14, 1909, p. 83, pl. 1, figs. 5 A-E.

Niagaran (Waldron): Iron City, Newsom, etc., Tennessee.

Plectambonites transversalis (Wahlenberg).

Anomites transversalis Wahlenberg, Act. Soc. Upsaliensis, 3, 1821, p. 64.

Strophomena elegantula Hall, Geol. New York, Rep. 4th Dist., 1843, p. 72, fig. 1.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 1126, fig.

Strophomena transversalis Hall, ibid., 1843, p. 105, fig. 4.—Owen, Amer. Jour. Sci. Arts, 48, 1845, p. 312, fig. 4.

Leptæna transversalis Dalman, Kongl. Vet.-Akad. Handl., 1828, p. 109, pl. 1, fig. 4.—Hall, Pal. New York, 2, 1852, p. 256, pl. 53, fig. 5.—Billings, Canadian Nat. Geol., 1, 1856, p. 138, pl. 2, figs. 14, 15.—Safford, Geol. Tennessee, 1869, p. 315, fig. 12.—Davidson, Mon. British Sil. Brach. Pal. Soc., 1871, p. 318, pl. 48, figs. 1-9.—Hall, 2d Ann. Rep. New York State Geol., 1883, pl. 46, figs. 34-36.

Plectambonites tenera Shaler, Bull. Mus. Comp. Zool., 4, 1865, p. 64.

Leptæna transversalis var. elegantula Foerste, Proc. Boston Soc. Nat. Hist., 24, 1890, p. 294, pl. 6, fig. 6.

Plectambonites transversalis Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 298, pl. 15, figs. 34-36.—Foerste, Geol. Ohio, 7, 1895, p. 566, pl. 25, fig. 5; pl. 30, fig. 13; pl. 31, fig. 6.—Grabau, Bull. New York State Mus., 45, 1901, p. 183, fig. 98; Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 183, fig. 90.—Whiteaves, Geol. Surv. Canada, Pal. Foss., 3, pt. 4, 1906, p. 251.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 227, fig. 275.

Clinton-Niagaran: Europe; New York, Indiana, Wisconsin, Tennessee, etc.; Ontario; New Brunswick and Anticosti; South America.

Plectambonites transversalis alabamensis (Foerste).

Leptæna transversalis var. alabamensis Foerste, Proc. Boston Soc. Nat. Hist., 24, 1890, p. 296, pl. 5, fig. 9.

Plectambonites transversalis alabamensis Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 311.

Clinton: Collinsville, Alabama.

Plectambonites transversalis prolongatus (Foerste).

Leptæna prolongata Foerste, Bull. Sci. Lab. Denison Univ., 1, 1885, p. 79, pl. 13, fig. 5.

Leptæna transversalis var. prolongata Foerste, Proc. Boston Soc. Nat. Hist., 24, 1890, p. 297, pl. 5, fig. 13.

Plectambonites transversalis prolongatus Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 311.

Upper Medinan (Brassfield): Dayton, Ohio; Wildwood Station, Georgia.

PLECTOCERAS Hyatt. Genotype: Nautilus jason Billings.

Plectoceras Hyatt, Proc. Boston Soc. Nat. Hist., 22, 1883, p. 268; Amer. Phil. Soc. Proc., 32, 1894, p. 499.—Miller, N. A. Geol. Pal., 2d App., 1897, p. 776.—Whiteaves, Geol. Surv. Canada Pal. Foss., 3, pt. 4, 1906, p. 299.—Ruedemann, Bull. New York State Mus., 90, 1906, p. 482.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 72.

Plectoceras bickmoreanum (Whitfield).

Lituites Bickmoreanus Whitfield, Bull. Amer. Mus. Nat. Hist., 1, 1885, p. 191, pl. 21, figs. 1-3.—Newell, Proc. Boston Soc. Nat. Hist., 23, p. 485 (loc. occ.).—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 355, figs.

lectoceras bickmoreanum—Continued.
Lituites (Ophidioceras) bickmoreanus Kindle and Breger, 28th Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1904, p. 473, pl. 25, fig. 1.
Plectoceras bickmoreanum Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 73.
Niagaran: Wabash, Delphi, Huntington, etc., Indiana.
Plesiotype.—Cat. No. 52946, U.S.N.M.

lectoceras bondi (Safford).
Cyrtoceras Bondi Safford, Geol. Tennessee, 1869, p. 290, pl. 4 (G. 3), fig. 3a–d.
Plectoceras bondi Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 73.
Stones River (Murfreesboro): Central Tennessee.

lectoceras halli (Foord).
Inachus undatus (part) Conrad, in Emmon's Geology, New York, pt. 2, Surv. 2d Geol. Dist., 1842, p. 394, No. 104, "fig. 2, edge view."
Lituites undatus (part) Hall, Pal. New York, 1, 1847, p. 52, pl. 13, figs. 1a, 1b.—Emmons, Amer. Geol., pt. 2, 1855, p. 146, pl. 5, fig. 14a.—Billings, Geol. Canada, 1863, pp. 156, 951.
Cryptoceras undatum Chapman, Canadian Jour., n. s., 2, 1857, p. 267; Ann. Mag. Nat. Hist., 2d ser., 20, p. 107.
Trocholites undatus (part) Hyatt, Proc. Boston Soc. Nat. Hist., 22, 1883, p. 267.
Trochoceras halli Foord, Cat. Sil. Foss. Ceph. British Mus., pt. 2, 1891, p. 42, figs. 4a–b.
Plectoceras halli Whiteaves, Ottawa Nat., 17, 1903, p. 119, 120, 161; Geol. Surv. Canada Pal. Foss., 3, pt. 4, 1906, p. 302, pl. 35, figs. 3, 4, 4a.
Plectoceras obscurum Hyatt, Proc. Amer. Phil. Soc., 32, 1894, p. 445.
Black River: Lorette, near Quebec, and near Ottawa, Canada.

lectoceras jason (Billings).
Nautilus Jason Billings, Canadian Nat. Geol., 4, 1859, p. 464.
Plectoceras Jason Hyatt, Boston Soc. Nat. Hist. Proc. 22, 1884, p. 268; Amer. Phil. Soc. Proc., 32, 1894, p. 499.—Whiteaves, Ottawa Nat., 17, 1903, p. 120.—Ruedemann, Bull. New York State Mus., 90, 1906, p. 484, pl. 24, fig. 1; pls. 29–31, figs. 42–44.—Whiteaves, Geol. Surv. Canada Pal. Foss., 3, pt. 4, 1906, p. 301, pl. 36, figs. 1, 2.—Grabau and Shimer, N. A. Index Fossils, 2, 1910. p. 73, fig. 1285.—Ruedemann, Bull. New York State Mus., 158, 1912, p. 141, pl. 1.
Chazyan: Mingan Islands Canada (Mingan); Valcour Island, New York (Crown Point).

LECTOCERAS OBSCURUM Hyatt. See Plectoceras halli.

lectoceras tyrans (Billings).
Nautilus tyrans Billings, Canadian Nat. Geol., 4, 1859, p. 465.
Plectoceras tyrans Schuchert and Twenhofel, Bull. Geol. Soc. Amer., 21, 1910, p. 691.
Chazyan (Mingan): Mingan Islands, Canada.

lectoceras? undatum (Conrad).
Inachus undatus (pars) (Conrad MS.) Emmons, Nat. Hist. New York, Geol., 2, 1842, p. 394, fig. 104.
Lituites undatus Hall (part), Pal. New York, 1, 1847, p. 52, pl. 13, fig. 1; pl. 13 (bis).—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 146, pl. 5, fig. 14; Man. Geol., 1860, p. 97, fig. 86.—Chapman, Canadian Jour., n. s., 8, 1863, p. 23, fig. 135; p. 198, fig. 173; Expos. Min. Geol. Canada, 1864, p. 131, fig. 135; p. 170, fig. 173.

Plectoceras? undatum—Continued.

Trocholites undatus (part) Hyatt, Proc. Boston Soc. Nat. Hist., 22, 1883, p. 267.

Eurystomites undatum Hyatt, Proc. Amer. Philos. Soc., 22, 1894, p. 445.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 69, fig. 1279.

Plectoceras undatum Whiteaves, Ottawa Nat., 17, 1903, p. 121; Geol. Surv. Canada, Pal. Foss., 3, pt. 4, 1906, p. 305, pl. 37.

Euomphalus catilloides Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 230, figs.

Black River: Watertown, New York (Watertown); Kingston, Ontario.

Plectoceras undatum occidentale (Hall).

Lituites undatus var. occidentalis Hall, Rep. Supt. Geol. Surv. Wisconsin, 1861, p. 38.—Whitfield, Mem. Amer. Mus. Nat. Hist., 1, pt. 2, 1895, p. 63, pl. 10, fig. 7; pl. 11; pl. 12, fig. 3.

Black River (Platteville): Beloit, Wisconsin; Dixon and Rockton, Illinois; Minneapolis, etc., Minnesota.

PLECTORTHIS Grabau and Shimer (part). See Eoorthis Walcott.

PLECTORTHIS Hall and Clarke. Genotype: Orthis plicatella Hall.

Orthis (group of O. plicatella) Hall, Bull. Geol. Soc. Amer., 1, 1889, p. 20.

Plectorthis Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pp. 194, 221.—Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 435.—Hall and Clarke, 11th Ann. Rep. New York State Geol., 1894, p. 266.—Cumings, Amer. Jour. Sci., 4th ser., 15, 1903, p. 11.—Walcott, Proc. U. S. Nat. Mus., 28, 1905, p. 257.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 893.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 251.—Schuchert, Zittel-Eastman Textb. Pal., 1913, p. 381.

Austinella (new subgenus of Dinorthis) Foerste, Bull. Sci. Lab. Denison Univ., 14, 1909, p. 225. (Genotype: Orthis kankakensis McChesney.)

Cyclocœlia Foerste (not Dujardin), Bull. Sci. Lab. Denison Univ., 14, 1909, p. 227.

Encuclodema Foerste, Bull. Sci. Lab. Denison Univ., 17, 1912, p. 139. (Genotype: Orthis sordida Hall.)

Plectorthis æquivalvis (Hall).

Orthis æquivalvis Hall (not Davidson, 1847), Pal. New York, 1, 1847, p. 120, pl. 32, fig. 6.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 196, pl. 9, figs. 6a–c.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 507, figs.

Plectorthis æquivalvis Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pp. 194–221.—Foerste, Bull. Sci. Lab. Denison Univ., 16, 1910, p. 46, pl. 2, figs. 13a, b; pl. 6, figs. 17a, b.

Maysville (Fairmount): Cincinnati, Ohio, and vicinity.

Plectorthis æquivalvis latior Foerste.

Plectorthis equivalvis latior Foerste, Bull. Sci. Lab. Denison Univ., 14, 1910, pl. 6, fig. 3, p. 46.

Maysville (Fairmount): Cincinnati, Ohio.

Plectorthis æquivalvis pervagata Foerste.

Plectorthis equivalvis-pervagata Foerste, Bull. Sci. Lab. Denison Univ., 16, 1910, pl. 6, fig. 2, p. 46.

Maysville (Fairmount): Cincinnati, Ohio.

Plectorthis (Encuclodema) crassiplicata (Foerste).

Cyclocœlia crassiplicata Foerste, Bull. Sci. Lab. Denison Univ., 16, 1910, p. 36, pl. 3, figs. 16a–c; pl. 6, figs. 9a–c, 10a–c.

Maysville (Fairmount): Cincinnati, Ohio.

PLECTORTHIS DICHOTOMA Hall and Clarke. See Plectorthis neglecta.

Plectorthis dichotoma Hall.

Orthis dichotoma Hall, Pal. New York, 1, 1847, p. 125, pl. 32, fig. 13.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 195, pl. 9, fig. 13.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 513, figs.

Plectorthis dichotoma(?) Foerste, Bull. Sci. Lab. Denison Univ., 14, 1910, pl. 5, fig. 16; Bull. 16, p. 49.

Maysville: Cincinnati, Ohio.

Observation.—This species may be the same as Plectorthis neglecta, but as the type is lost the name may as well be abandoned.

PLECTORTHIS ELLA Hall and Clarke. See Plectorthis (Encuclodema) sordida.

Plectorthis exfoliata (Raymond).

Hebertella exfoliata Raymond, Amer. Jour. Sci., 20, 1905, p. 370.

Plectorthis exfoliata Raymond, Ann. Carnegie Mus., 7, 1911, p. 238, pl. 35, figs. 11, 12.

Chazyan (Day Point): Chazy, Valcour, and Valcour Island, New York; Isle la Motte, Vermont.

Plectorthis fissicosta (Hall).

Orthis fissicosta Hall, Pal. New York, 1, 1847, p. 121, pl. 32, fig. 7.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 195, pl. 9, fig. 7a, b.—Meek, Pal. Ohio, 1, 1873, p. 106, pl. 8, fig. 6.—Miller, Cincinnati Quart. Jour. Sci., 2, 1875, p. 30.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 516, figs.

Plectorthis fissicosta Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pp. 194, 221.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 252, fig. 300c-d.—Foerste, Bull. Sci. Lab. Denison Univ., 14, 1909, p. 221, pl. 4, figs. 5a, 5b; ibid., 16, 1910, p. 48, pl. 6, fig. 4; ibid., 17, 1912, p. 130, pl. 8, fig. 4.

Maysville (Fairview): Cincinnati, Ohio, and vicinity.

Plectorthis fissicosta triplicatella (Meek).

Orthis triplicatella Meek, American Jour. Sci., 4, 1872, p. 281; Pal. Ohio, 1, 1873, p. 109, pl. 8, fig. 8.—Miller, Cincinnati Quart. Jour. Sci., 2, 1875, p. 31.

Orthis plicatella var. triplicatella Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 531, figs.

Plectorthis triplicatella Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pp. 194, 221.

Plectorthis plicatella var. triplicatella Cumings, 32d Ann. Rep., Dep. Geol. Nat. Res. Indiana, 1908, p. 925, pl. 36, figs. 4-4b.

Plectorthis fissicosta var. triplicatella Foerste, Bull. Sci. Lab. Denison Univ., 14, 1909, p. 222.

Maysville (Fairmount): Cincinnati, Ohio, and vicinity.

Cotypes.—Cat. No. 15945, U.S.N.M.

Plectorthis jamesi (Hall).

Orthis jamesi Hall, 14th Rep. New York State Cab. Nat. Hist., 1861, p. 89.—Miller, Cincinnati Quart. Jour. Sci., 2, 1875, p. 33.—Hall and Whitfield, Pal. Ohio, 2, 1875, p. 77, pl. 1, figs. 21, 22.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 521, figs.

Plectorthis jamesi Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pp. 194, 221.—Foerste, Bull. Sci. Lab. Denison Univ., 16, 1910, p. 50, pl. 2, figs. 9a, b.

Maysville (Corryville): Cincinnati, Ohio, and vicinity.

Plectorthis (Austinella) kankakensis (McChesney).

Orthis kankakensis McChesney, New Pal. Fossils, 1861, p. 77; Trans. Chicago Acad. Sci., 1, 1868, p. 29, pl. 9, fig. 3.

Plectorthis (Austinella) kankakensis—Continued.

Plectorthis kankakensis Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 221, pl. 5, figs. 24, 25.

Austinella kankakensis Foerste, Bull. Sci. Lab. Denison Univ., 14, 1909, p. 224 (gen. ref.).

Richmond (Fernvale): Wilmington, Illinois.

Plectorthis neglecta (James).

Orthis neglecta James, Paleontologist, 4, 1879, p. 26.

Plectorthis dichotoma Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 221, pl. 5, fig. 21.

Plectorthis neglecta Foerste, Bull. Sci. Lab. Denison Univ., 16, 1910, p. 52, pl. 6, figs. 1a–e.

Maysville (Mount Hope): Cincinnati, Ohio, and vicinity.

Observation.—See Plectorthis dichotoma for a possible synonym.

PLECTORTHIS (ERIDORTHIS) NICKLESI Foerste. See Hebertella (Eridorthis) nicklesi.

Plectorthis plicatella (Hall).

Orthis plicatella Hall, Pal. New York, 1, 1847, p. 122, pl. 32, fig. 9.—Billings (?), Geol. Canada, 1863, p. 165, fig. 145.—Meek, Pal. Ohio, 1, 1873, p. 108, pl. 8, fig. 7.—Miller, Cincinnati Quart. Jour. Sci., 2, 1875, p. 30.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 193, pl. 9, figs. 9a, b.—Shaler, Mem. Geol. Surv. Kentucky, 1, 1876, p. 34.—Chamberlin, Geol. Wisconsin, 1, 1883, p. 155.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 530, figs.

Orthis (Plectorthis) plicatella Schuchert, Proc. U. S. Nat. Mus., 22, 1900, p. 156.

Plectorthis plicatella Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 221, pl. 5, figs. 18–20.—Ruedemann, Bull. New York State Mus., 49, 1901, p. 25.—Raymond, Bull. Amer. Pal., 3, 1902, p. 304, pl. 19, figs. 5, 6.—Weller, Geol. Surv. New Jersey, Pal., 3, 1903, p. 152, pl. 9, figs. 22–24; p. 216, pl. 16, fig. 6.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 252, fig. 301d-f.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 925, pl. 26, figs. 3–3f.—Foerste, Bull. Sci. Lab. Denison Univ., 16, 1910, p. 49, pl. 6, fig. 5a–b.

Maysville (Fairmount): Cincinnati, Ohio, and vicinity.

Observation.—Some of the above citations may include the Trenton variety of the species.

Plectorthis plicatella trentonensis Foerste.

Orthis (Plectorthis) plicatella Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 436, pl. 33, figs. 5–7.

Plectorthis plicatella var. trentonensis Foerste, Bull. Sci. Lab. Denison Univ., 16, 1910, p. 49.

Trenton (Prosser): Kenyon, etc., Minnesota.

PLECTORTHIS PLICATELLA var. TRIPLICATELLA Cumings. See Plectorthis fissicosta triplicatella.

PLECTORTHIS (ERIDORTHIS) ROGERSENSIS Foerste. See Hebertella (Eridorthis) rogersensis.

Plectorthis (Austinella) scovillei (Miller).

Orthis scovilli Miller, Jour. Cincinnati Soc. Nat. Hist., 5, 1882, p. 40, pl. 1, fig. 5.

Hebertella scovilli Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 222.

Dinorthis scovillei Foerste, Amer. Geol., 31, 1903, p. 340.

Austinella scovillei Foerste, Bull. Sci. Lab. Denison Univ., 14, 1909, p. 224; 17, 1912, p. 130, pl. 8, figs. 8a–c.

Richmond (Waynesville): Oregonia, Ohio.

Plectorthis (Encuclodema) sectostriata (Ulrich).
Orthis(?) sectostriata Ulrich, Jour. Cincinnati Soc. Nat. Hist., 2, 1879, p. 15, pl. 7, fig. 11.
Plectorthis? sectostriata Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 221.
Cyclocœlia sectostriata Foerste, Bull. Sci. Lab. Denison Univ., 14, 1909, p. 227 (gen. ref.); 16, 1910, p. 37, pl. 3, fig. 15a, b.
Maysville (Fairmount): Cincinnati, Ohio, and vicinity.

Plectorthis (Encuclodema) sordida (Hall).
Orthis sordida Hall, Pal. New York, 1, 1847, p. 148.
Cyclocœlia sordida Foerste, Bull. Sci. Lab. Denison Univ., 14, 1909, p. 227; 16, 1910, p. 36, pl. 2, fig. 10; pl. 6, fig. 8a, b.
Orthis ella Hall, 13th Rep. New York State Cab. Nat. Hist., 1861, p. 121.
Orthis? ella Hall, 15th Rep., ibid., 1862, pl. 2, figs. 6–8; 24th Rep., ibid., 1872, pl. 7, fig. 21.—Meek, Pal. Ohio, 1, 1873, p. 105, pl. 8, fig. 9.—Hall and Whitfield, ibid., 2, 1875, p. 76, pl. 1, fig. 20.—Miller, Cincinnati Quart. Jour. Sci., 2, 1875, p. 32.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 514, figs.
Plectorthis? ella Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 221, pl. 5, figs. 22, 23.
Plectorthis ella Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, p. 924, pl. 36, figs. 2–2c.
Cyclocœlia ella Foerste, Bull. Sci. Lab. Denison Univ., 14, 1909, p. 227; 16, 1910, pl. 2, figs. 11, 12.
Maysville (Fairmount): Cincinnati, Ohio, and vicinity.

Plectorthis (Encuclodema) sordida multiplicata Foerste.
Cyclocœlia sordida multiplicata Foerste, Bull. Sci. Lab. Denison Univ., 16, 1910, p. 36, pl. 6, figs. 6a–d, 7a–d.
Maysville (Fairmount): Cincinnati, Ohio.

PLECTORTHIS TRIPLICATELLA Hall and Clarke. See Plectorthis fissicosta triplicatella.

Plectorthis (Austinella) whitfieldi (N. H. Winchell).
Orthis whitfieldi N. H. Winchell, 9th Ann. Rep. Geol. Nat. Hist. Surv. Minnesota, 1881, p. 115.
Orthis pectinella Whitfield (part), Geol. Wisconsin, 4, 1882, p. 259, pl. 12, fig. 8.
Plectorthis whitfieldi Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 221, pl. 5, fig. 26.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 252, fig. 301g–i.
Orthis (Plectorthis) whitfieldi Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 437, pl. 33, figs. 8–13.
Austinella whitfieldi Foerste, Bull. Sci. Lab. Denison Univ., 14, 1909, p. 244 (gen. ref.); 17, 1912, p. 131, pl. 8, fig. 9.
Plectorthis sp. cf. whitfieldi Ruedemann, Bull. New York State Mus., 162, 1912, pl. 4, fig. 8.
Richmond (Maquoketa): Spring Valley and Granger, Minnesota; Delafield, Wisconsin; Lattners, Iowa; Savannah, Illinois.

PLETHOCARDIA Ulrich. Genotype: P. umbonata Ulrich.
Plethocardia Ulrich, 19th Ann. Rep. Geol. Nat. Hist. Surv. Minnesota, 1892, p. 243.—Miller, N. A. Geol. Pal., 1st App., 1892, p. 701.—Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 575.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 416.

Plethocardia? cordiformis (Billings).
Cyrtodonta cordiformis Billings, Canadian Nat. Geol., 3, 1858, p. 437; Geol. Surv. Canada, Rep. Progr. for 1857, 1858, p. 185; Geol. Canada, Geol. Surv. Canada, 1863, p. 147, fig. 103a, b.
Plethocardia? cordiformis Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 577 (gen. ref.).
Cypricardites cordiformis Miller, N. A. Geol. Pal., 1889, p. 476 (gen. ref.).
Black River: St. Josephs Island, Lake Huron.

Plethocardia suberecta Ulrich.
Plethocardia suberecta Ulrich, 19th Ann. Rep. Geol. Nat. Hist. Surv. Minnesota, 1892, p. 245, fig. 29; Geol. Minnesota, 3, pt. 2, 1894, p. 577, pl. 40, figs. 25–27.
Trenton (Prosser): Near Cannon Falls, Minnesota.
Holotype.—Cat. No. 46278, U.S.N.M.

Plethocardia umbonata Ulrich.
Plethocardia umbonata Ulrich, 19th Ann. Rep. Geol. Nat. Hist. Surv. Minnesota, 1892, p. 244, fig. 28; Geol. Minnesota, 3, pt. 2, 1894, p. 576, pl. 40, figs. 22–24.—Miller, N. A. Geol. Pal., 1st App., 1892, p. 701, fig. 1259.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 416, fig. 537.
Black River: Six miles south of Cannon Falls, Minnesota (Decorah); Mercer County, Kentucky (Lowville).
Holotype.—Cat. No. 46279, U.S.N.M.

PLETHOMYTILUS Hall. Genotype: P. ponderosa Hall.
Plethomytilus Hall, Pal. New York, 5, pt. 1, Lam., 1883, p. 4; 1st Rep. State Geol. New York, 1884, p. 15.—Frech, Zeits d. d. geol. Gesell., 40, 1888, p. 364.—Miller, N. A. Geol. Pal., 1889, p. 503.—Whidborne, Mon. Dev. Fauna South England, 2, Pal. Soc., 1892, p. 52.—Grabau, Bull. Buffalo Soc. Nat. Sci., 6, 1899, p. 216.

Plethomytilus cuneatus Kindle and Breger.
Plethomytilus cuneatus Kindle and Breger, 28th Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1904, p. 451, pl. 10, fig. 9.
Niagaran: Georgetown, Indiana.

PLETHOPELTIS Raymond. Genotype: Agraulos saratogensis Walcott.
Plethopeltis Raymond, Bull. Victoria Mem. Mus., 1, 1913, p. 64.

Plethopeltis armatus (Billings).
Bathyurus armatus Billings, Canadian Nat. Geol., 5, 1860, p. 319, fig. 23; Geol. Canada, Geol. Surv. Canada, 1863, p. 238, fig. 273; Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 411, fig. 392.
Plethopeltis armatus Raymond, Bull. Victoria Mem. Mus., 1, 1913, p. 65, pl. 7, fig. 18.
Ozarkian? (Levis—erratics): Point Levis, Quebec.

Plethopeltis saratogensis (Walcott).
Bathyurus armatus Walcott, 32d Ann. Rep. New York State Mus., 1879, p. 131.
Ptychoparia saratogensis Dwight, Trans. Vassar Bros. Inst., 4, 1887, pp. 207–208.
Ptychoparia (Agraulos) saratogensis Walcott, Bull. U. S. Geol. Surv., 30, 1886, p. 21.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 844, figs.
Agraulos saratogensis Walcott, Proc. U. S. Nat. Mus., 13, 1890, p. 276, pl. 21, fig. 14.—Weller, Geol. Surv. New Jersey, Rep. Pal., 3, 1903, pp. 118–119, pl. 1, figs. 7–9.—Walcott, Smiths. Misc. Coll., 57, 1912, p. 269, pl. 43, figs. 11–15a.
Plethopeltis saratogensis Raymond, Bull. Victoria Mem. Mus., 1, 1913, p. 64.
Upper Cambrian or Ozarkian: Saratoga Springs and south of Poughkeepsie, New York (Hoyt); Blairstown, New Jersey (Kittatinny).
Cotypes.—Cat. No. 23863, U.S.N.M.

PLETHOSPIRA Ulrich. Genotype: Holopea cassina Whitfield.
Plethospira Ulrich, Geol. Minnesota, 3, pt. 2, 1897, pp. 958, 1008.

Plethospira arenaria (Billings).
Murchisonia arenaria Billings, Canadian Nat. Geol., 4, 1859, p. 359, fig. 9; Geol. Canada, 1863, p. 120, fig. 33.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 426, fig.
Holopea arenaria Whitfield, Bull. Amer. Mus. Nat. Hist., 1, 1886, p. 310, pl. 25, fig. 5.—Seely, Vermont State Geol. Rep., 7, pl. 59, 1910, fig. 5.
Plethospira arenaria Ulrich, Geol. Minnesota, 3, 1897, pt. 2, p. 1009 (gen. ref.).
Canadian (Beekmantown): Godmanchester, Canada; Fort Cassin, Vermont.

Plethospira cassina (Whitfield).
Holopea Cassina Whitfield, Bull. Amer. Mus. Nat. Hist., 1, 1886, p. 310, pl. 25, figs. 6, 7.—Seely, Vermont State Geol. Rep., 7, 1910, pl. 59, figs. 6, 7.
Plethospira cassina Ulrich, Geol. Minnesota, 3, pt. 2, 1897, p. 1009, fig. 7a.
Canadian (Beekmantown): Fort Cassin, Vermont.
Plesiotype.—Cat. No. 28137, U.S.N.M. (Ulrich).

Plethospira hyale (Billings).
Murchisonia hyale Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 33 (adv. sheets, 1862).
Plethospira hyale Ulrich, Geol. Minnesota, 3, pt. 2, 1897, p. 1009 (gen. ref.).—Raymond, Ann. Carnegie Mus., 4, 1908, p. 217.
Chazyan or Black River: Phillipsburg, Quebec.

Plethospira semele (Hall).
Pleurotomaria semele Hall, Geol. Rep. Wisconsin, 1861, p. 36.—Whitfield, Mem. Amer. Mus. Nat. Hist., 1, pt. 2, 1895, p. 61, pl. 8, figs. 8–10.
Plethospira semele Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 1010, pl. 70, figs. 8–10.
Richmond (Maquoketa): Maquoketa Creek and Graf, Iowa.
Plesiotype.—Cat. No. 45956, U.S.N.M. (Ulrich and Scofield).

Plethospira striata Ulrich.
Plethospira striata Ulrich, Geol. Minnesota, 3, pt. 2, 1897, p. 1011, pl. 70, fig. 7.
Pleurotomaria striata Miller, N. A. Geol. Pal., 2d App., 1897, p. 769 (gen. ref.).
Richmond (Waynesville): Hanover, Butler County, Ohio.
Holotype.—Cat. No. 45957, U.S.N.M.

PLEURACANTHUS Milne-Edwards. See Dalmanites Barrande.

PLEUROCYSTIS Haeckel. See Pleurocystites Billings.

PLEUROCYSTITES Billings. Genotype: P. squamosus Billings.
Pleurocystites Billings, Canadian Jour., 2, 1854, p. 251; Geol. Surv. Canada, Rep. Progr. for 1853–1856, 1857, p. 284.—Chapman, Canadian Jour., n. s., 2, 1857, p. 303.—Billings, Geol. Surv. Canada, dec. 3, 1858, p. 46.—Hall, Pal. New York, 3, 1859, p. 152.—Chapman, Expos. Min. Geol. Canada, 1864, p. 109.—Billings, Amer. Jour. Sci. Arts, 2d ser., 48, 1869, p. 77; Canadian Nat., n. s., 4, 1869, p. 288, fig. 5; Ann. Mag. Nat. Hist., 4th ser., 5, 1870, p. 260; Pal. Foss., Geol. Surv. Canada, 2, pt. 1, 1874, p. 97, figs. 54, 55; p. 98.—Zittel, Handb. Pal., 1, 1879, p. 422.—Miller, N. A. Geol. Pal., 1889, p. 272.—Jaekel, Stammesg. Pelmat., 1, Thecoida u. Cystoidea, Berlin, 1899, p. 231.—Zittel-Eastman Textb. Pal., 1, 1900, p. 186.—Zittel, Grundzuge Pal., 1, 1910, p. 187.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 465.—Springer, Zittel-Eastman Textb. Pal., 2d ed., 1913, p. 154.

PLEUROCYSTITES—Continued.

Pleurocystis Carpenter, Jour. Linn. Soc. Zool., 24, 1891, p. 12.—Haeckel, Amphor u. Cystoid, 1896, p. 44, pl. 2, figs. 15, 16.—Bather Treatise on Zool., pt. 3, Echinoderma, London, 1900, p. 64, fig. 34.

Pleurocystites anticostiensis Billings.

Pleurocystites anticostiensis Billings, Geol. Surv. Canada, Rep. Progress for 1853–1856, 1857, p. 288; Geol. Surv. Canada, dec. 3, 1858, p. 52, pl. 1. fig. 3; Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 8.

Pleurocystites squamosus var. anticostiensis Jaekel, Stammesgesch. d. Pelmat., 1899, p. 234.

Pleurocystis anticostiensis Bather, Trans. Roy. Soc. Edinburgh, 49, pt. 2, 1913, p. 468.

Richmond (Charleton): Charleton Point, Anticosti.

Pleurocystites elegans Billings.

Pleurocystites elegans Billings, Geol. Surv. Canada, Rep. Progr. for 1853–1856, 1857, p. 287; Geol. Surv. Canada, dec. 3, 1858, p. 51, pl. 2, figs. 2a-c.—Chapman, Canadian Jour., n. s., 4, 1859, p. 45.—Billings, Trans. Ottawa Field Nat. Club, 1, 1881, p. 34.—Jaekel, Stammesgesch. d. Pelmat., 1899, p. 234.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 466.

Pleurocystis elegans Bather, Trans. Roy. Soc. Edinburgh, 49, 1913, p. 466, fig. 67.

Trenton: Ottawa, Ontario.

Pleurocystites exornatus Billings.

Pleurocystites exornatus Billings, Geol. Surv. Canada, Rep. Progr. for 1853–1856, 1857, p. 287; Geol. Surv. Canada, dec. 3, 1858, p. 52.—Chapman, Canadian Jour., n. s., 4, 1859, p. 45.

Pleurocystites filitextus var. exornata Jaekel, Stammesges. Pelmat., 1, 1899, p. 235.

Pleurocystis exornata Bather, Trans. Roy. Soc. Edinburgh, 49, pt. 2, 1913, p. 467.

Trenton: Near Montreal, Quebec.

Pleurocystites filitextus Billings.

Pleurocystites filitextus Billings, Canadian Jour., 2, 1854, p. 252, figs. 13, 14; Geol. Canada, Rep. Progr. for 1853–1856, 1857, p. 286; Geol. Surv. Canada, dec. 3, 1858, p. 50, pl. 2, figs. 1a, 1b.—Chapman, Expos. Min. Geol. Canada, 1864, p. 109.—Billings, Trans. Ottawa Field Nat. Club, 1, 1881, p. 34.—Jaekel, Stammesg. Pelmat., 1, Thecoidea u. Cystoidea, Berlin, 1899, p. 232, fig. 45; p. 234, pl. 12, figs. 3–5.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 466.

Pleurocystis filitextus Haeckel, Amphorideen und Cystoideen, 1896, p. 44, pl. 2, figs. 15, 16.—Bather, Treatise on Zool., pt. 3, Echinoderma, London, 1900, p. 65, fig. 34.—Kirk, Proc. U. S. Nat. Mus., 41, 1911, pl. 2, fig. 4; pl. 3, fig. 3.

Trenton (Curdsville): Ottawa, Ontario; Hull, Quebec.

PLEUROCYSTITES FILITEXTUS var. EXORNATA Jaekel. See Pleurocystites exornatus.

Pleurocystites mercerensis Miller and Gurley.

Pleurocystites mercerensis Miller and Gurley, Bull. Illinois State Mus. Nat. Hist., 6, 1895, p. 60, pl. 5, figs. 25, 26.—Miller, N. A. Geol. Pal., 2d App., 1897, p. 751, fig. 1379.—Jaekel, Stammes. Pelmat., 1, Thecoidea u. Cystoidea, Berlin, 1899, p. 234.

Pleurocystis mercerensis Bather, Trans. Roy. Soc. Edinburgh, 49, pt. 2, 1913, p. 468.

Trenton (Curdsville): Mercer County, Kentucky.

PLEUROCYSTITES ROBUSTUS Billings. See Pleurocystites squamosus robustus.

Pleurocystites squamosus Billings.

Pleurocystites squamosus Billings, Canadian Jour., 2, 1854, p. 251, figs. 9–12; Geol. Surv. Canada, Rep. Progr. for 1853–1856, 1857, p. 286; Geol. Surv. Canada, dec. 3, 1858, p. 49, pl. 1, figs. 1a–d.—Chapman, Expos. Min. Geol. Canada, 1864, p. 109.—Roemer, Leth. geog., 1, Leth. Pal., Atlas, 1876, pl. 11, fig. 6.—Zittel, Handb. Pal., 1, Munich, 1879, p. 422, fig. 298.—Chamberlin, Geol. Wisconsin, 1, 1883, p. 154, fig.—Miller, N. A. Geol. Pal., 1889, p. 272, fig. 399.—Jaekel, Stammes. Pelmat., 1, Thecoidea u. Cystoidea, Berlin, 1899, p. 234.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 465, fig. 1774.

Pleurocystis squamosa Haeckel, Amph. und Cyst., 1, 1896, pp. 37, 44.—Springer, Mem. Geol. Surv. Canada, 15P, 1911, p. 45 (loc. occ.).—Bather, Trans. Roy. Soc. Edinburgh, 49, pt. 2, 1913, p. 464, figs. 63–65.

Trenton (Curdsville): Ottawa and Kirkfield, Ontario.

Pleurocystites squamosus robustus (Billings).

Pleurocystites robustus Billings, Canadian Jour., 2, 1854, p. 252, fig. 15; Geol. Surv. Canada, Rep. Progr. for 1853–1856, 1857, p. 287; Geol. Surv. Canada, dec. 3, 1858, p. 49, pl. 1, fig. 2a; Ann. Mag. Nat. Hist., 4th ser., 5, 1870, p. 260; Pal. Foss. Geol. Surv. Canada, 2, pt. 1, 1874, p. 98.—Jaekel, Stammes. Pelmat., 1899, p. 234.

Pleurocystis robustus Springer, Geol. Surv. Canada, Mem. 15P, 1911, p. 45 (loc. occ.).

Pleurocystis squamosa var. robusta Bather, Trans. Roy. Soc. Edinburgh, 49, pt. 2, 1913, p. 465, fig. 66.

Trenton (Curdsville): Ottawa and Kirkfield, Ontario.

PLEUROGRAPSUS Nicholson. See Pleurograptus Nicholson.

PLEUROGRAPTUS Nicholson. Genotype: Cladograpsus linearis Carruthers.

Pleurograpsus Nicholson, Geol. Mag., 4, 1867, p. 257; Quart. Jour. Geol. Soc. London, 24, 1868, p. 9; Trans. Edinburgh Geol. Soc., 1, 1868, p. 58; Mon. British Grapt., 1872, p. 110.

Pleurograptus Zittel, Handb. Pal., 1, 1879, p. 298.—Tullberg, Sveriges Geol. Unders. Ser. C, No. 55, 1883, pp. 12, 14.—Hermann, Geol. Mag., dec. 3, 3, 1886, p. 18.—Wiman, Bull. Geol. Inst. Univ. Upsala, 2, pt. 2, 1896, p. 266.—Koken, Die Leitfossilien, Leipzig, 1896, p. 328.—Roemer and Frech, Leth. geog., 1, Theil, Leth. Pal., 1, 3 Lief., 1897, p. 586.—Elles and Wood, Mon. British Grapt. Pal. Soc., 1903, p. 119.—Ruedemann, Mem. New York State Mus., 11, pt. 2, 1908, p. 268.

Pleurograptus linearis (Carruthers).

Cladograpsus linearis Carruthers, Trans. Roy. Phys. Soc. Edinburgh, 1858, p. 467, fig. 1; Ann. Mag. Nat. Hist., 3d ser., 3, 1859, p. 24, fig. 3.

Cladograptus linearis Hall, 20th Rep. New York State Cab. Nat. Hist., 1868, p. 235, fig.; rev. ed., p. 270, fig.

Dendrograpsus linearis Carruthers, Geol. Mag., 4, 1867, p. 70.

Pleurograpsus linearis Nicholson, Geol. Mag., 4, 1867, p. 257, pl. 15, figs. 1–5.

Pleurograptus linearis Lapworth, Cat. West. Scotland Foss., 1876, p. 5, pl. 3, fig. 69.—Clark, Geol. Mag., 4th ser., 9, 1902, p. 498.—Elles and Wood, Mon. British Grapt., pt. 3, 1903, p. 119, pl. 14, fig. 7; pl. 17, fig. 1.—Olin, Kongl. Fysiogr. Sallsk. Handl. N. F., 17, 1906.—Ruedemann, Mem. New York State Mus., 11, pt. 2, 1908, p. 269, pl. 15, fig. 1, text fig. 186.

Cœnograptus (Pleurograptus) linearis Roemer and Frech, Leth. Pal., 1, 1897, p. 586, fig. 158.

Ordovician: Scotland (Hartfell); Holland Patent, New York (Utica).

PLEURONOTUS Hall. Genotype: Euomphalus decewi Billings.
Pleuronotus Hall, Nat. Hist. New York, Pal., 5, pt. 2, 1879, p. 138.—Koken, Neues Jahrb. Min. Geol. Pal., 6, Beilage-Band, 1889, p. 408.—Miller, N. A. Geol. Pal., 1889, p. 419.—Koken, Die Leitfossilien, Leipzig, 1896, p. 105, figs. 87, 4-6.

Pleuronotus subangulatus Grabau.
Pleuronotus subangulata Grabau, Michigan Geol. Surv., Geol. Ser. 1, 1909, p. 185.
Upper Monroan (Lucas): Salt shaft, Detroit, Michigan.

PLEURORHYNCHUS ANTIQUA Owen. See Conocardium antiquum.

PLEUROTOMARIA Defrance. Genotype: P. anglica Defrance.
Pleurotomaria Defrance, Tableau Corps Organisés Fossiles, 1824, p. 114; Dict. Sci. Nat., 41, p. 381.

Observation.—Many references to this genus have been made by American authors, but it seems useless to cite them since none of them probably refers to Pleurotomaria in a strict sense. See Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 960, for a discussion of this subject.

PLEUROTOMARIA of authors. See Clathrospira Ulrich and Scofield, Cyclonema Hall, Eotomaria Ulrich and Scofield, Lophospira Whitfield, Plethospira Ulrich, Raphistoma Hall, Raphistomina Ulrich and Scofield, and Seelya Ulrich.

Pleurotomaria abrupta Billings.
Pleurotomaria abrupta Billings, Canadian Nat. Geol., 4, 1859, p. 354.
Chazyan (Mingan): Mingan Islands, Canada.

Pleurotomaria agarista Billings.
Pleurotomaria Agarista Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 230.
Canadian (Quebec—H): Table Head, Newfoundland.

Pleurotomaria agave Billings.
Pleurotomaria Agave Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 170, text fig. 153.
Trenton: Naquareau River, above Red River, Canada.

Pleurotomaria aiens Sardeson.
Pleurotomaria aiens Sardeson, Bull. Minnesota Acad. Nat. Sci., 4, 1896, p. 76, pl. 3, figs. 16, 17.
St. Peter: Highland Park and South St. Paul, Minnesota.

Pleurotomaria (Trochonema?) ambigua (Hall).
Pleurotomaria ambigua Hall, Pal. New York, 1, 1847, p. 176, pl. 38, figs. 3a-b.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 161.
Trenton: Adams, Jefferson County, New York.

PLEUROTOMARIA AMERICANA Billings. See Liospira americana.

PLEUROTOMARIA AMPHITRITE Billings. See Euconia amphitrite.

Pleurotomaria angulata Conrad. Not recognized.
Pleurotomaria angulata Conrad (not Sowerby), Proc. Acad. Nat. Sci. Philadelphia, 1843, p. 330.—Owen, Geol. Expl. Iowa, Wisconsin, Illinois, 2d ed., 1844, p. 86, pl. 17, fig. 5.
Trenton: Lewis County, New York; Iowa; Wisconsin.

Pleurotomaria antiquata Hall.
Pleurotomaria antiquata Hall, Pal. New York, 1, 1847, p. 31, pl. 7, fig. 1.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 161.—Raymond, Ann. Carnegie Mus., 4, 1908, p. 218.
Chazyan: Chazy, New York.

PLEUROTOMARIA APERTA Billings. See Raphistoma apertum.

Pleurotomaria arabella Billings.
Pleurotomaria Arabella Billings, Pal. Foss., 1, Geol. Surv. Canada, 1868, p. 343, fig. 330.
Canadian (Beekmantown): Leeds and Grenville Counties, Canada.

PLEUROTOMARIA ARACHNE Billings. See Lophospira? arachne.

PLEUROTOMARIA (RAPHISTOMA) ATTELBOROENSIS Shaler and Foerste. See Raphistoma attleboroense.

Pleurotomaria axion Hall.
Pleurotomaria axion Hall, 20th Rep. New York State Cab. Hist, 1868, p. 344, pl. 15 (6), fig. 17; rev. ed., 1870, p. 394, pl. 15, fig. 17.—Kindle and Breger, 28th Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1904, p. 457, pl. 12, fig. 4.
Niagaran: Bridgeport, Illinois (Racine); Huntington, Indiana.

PLEUROTOMARIA BEEKMANENSIS Whitfield. See Euconia beekmanensis.

PLEUROTOMARIA BIANGULATA Hall. See Trochonema biangulatum.

PLEUROTOMARIA BICINCTA Lindstrom. See Lophospira bicincta.

PLEUROTOMARIA BILEX of authors. See Cyclonema bilex.

PLEUROTOMARIA BISPIRALIS Hall. See Lophospira bispiralis.

Pleurotomaria calcifera Billings.
Pleurotomaria calcifera Billings, Canadian Nat. Geol., 4, 1859, p. 352, fig. 5; Geol. Canada, Geol. Surv. Canada, 1863, p. 177, text figs. 27a–c.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 704, figs.
Canadian (Beekmantown): Near Beauharnois, Canada.

Pleurotomaria (Trochonema?) calphurnia (Billings).
Pleurotomaria? Calphurnia Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 230, figs. 214a, b.
Canadian (Quebec—G): Cape Norman, Newfoundland.

PLEUROTOMARIA CALYX of authors. See Raphistoma stamineum.

Pleurotomaria canadensis Billings.
Pleurotomaria Canadensis Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 342, text figs. 328a–c, 329.
Pleurotomaria Laurentina Billings, Geol. Canada, Geol. Surv. Canada, 1863, p. 117, fig. 28d (not 28a–c).
Canadian: Leeds and Grenville Counties and Mingan Islands, Canada.

PLEUROTOMARIA CANALIFERA Miller. See Eotomaria canalifera.

Pleurotomaria carinata (James). Not recognized.
Murchisonia carinata James, Cat. Low. Sil. Foss. Cincinnati Group, 1871, p. 8 (nom. nud.).

Pleurotomaria carinata—Continued.
Pleurotomaria carinata James, Cat. Low. Sil. Foss. Cincinnati Group, 1875, p. 6 (nom. nud.); Paleontologist, No. 2, 1878, p. 12; ibid., No. 6, 1882, p. 53.
Cincinnatian: Clinton County, Ohio.

PLEUROTOMARIA CASII Meek and Worthen. See Lophospira casii.

PLEUROTOMARIA CIRCE Billings. See Lophospira? circe.

Pleurotomaria clipeiformis Spencer.
Pleurotomaria clipeiformis Spencer, Trans. Acad. Sci. St. Louis, 4, 1884, p. 607, pl. 7, figs. 6, 6a; Bull. Mus. Univ. State Missouri, 1, 1884, p. 57, pl. 7, figs. 6, 6a.
Niagaran dolomite: Hamilton, Ontario.

PLEUROTOMARIA CLIVOSA Sardeson. See Trochonema? (Eunema) clivosum.

PLEUROTOMARIA CREVIERI Billings. See Raphistoma stamineum.

Pleurotomaria cryptata Billings.
Pleurotomaria cryptata Billings, Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 54.
Anticostian (Gun River, Jupiter River): Near Challoupe River, etc., Anticosti.

Pleurotomaria cyclonemoides Meek and Worthen.
Pleurotomaria cyclonemoides Meek and Worthen, Geol. Surv. Illinois, 3, 1868, p. 360, pl. 5, fig. 4.
Niagaran (Racine): Bridgeport, near Chicago, Illinois.

Pleurotomaria cyclostoma Whiteaves.
Pleurotomaria cyclostoma Whiteaves, Pal. Foss. Geol. Surv. Canada, 3, pt. 1, 1884, p. 23, pl. 3, figs. 12, 12a.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 707, figs.—Whiteaves, Pal. Foss. Geol. Surv. Canada, 3, pt. 2, 1895, p. 77 (loc. occ.); Geol. Surv. Canada Pal. Foss., 3, pt. 4, 1906, p. 336.
Niagaran (Guelph): Durham, Ontario.

PLEUROTOMARIA DEIOPEIA Billings. See Clathrospira deiopeia.

Pleurotomaria (Lophospira?) depauperata (Hall).
Pleurotomaria depauperata Hall, Rep. Geol. Surv. Wisconsin, 1862, p. 55, fig. 5.
Richmond(?): Southwestern Wisconsin.

PLEUROTOMARIA DIFFICILIS Whitfield. See Seelya difficilis.

PLEUROTOMARIA DOCENS of authors. See Liospira docens.

PLEUROTOMARIA DRYOPE Billings. See Eotomaria dryope.

PLEUROTOMARIA DURHAMENSIS Whiteaves. See Eotomaria durhamensis.

PLEUROTOMARIA ELORA Billings. See Euomphalopterus elora.

Pleurotomaria eloroidea Kindle and Breger.
Pleurotomaria eloroidea Kindle and Breger, 28th Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1904, p. 457, pl. 13, figs. 1, 2; pl. 14, fig. 3?.
Niagaran: Delphi and Huntington, Indiana.

PLEUROTOMARIA ETNA Billings. See Euconia etna.

PLEUROTOMARIA EUGENIA Billings. See Liospira eugenia.

Pleurotomaria filitexta Foerste.
Pleurotomaria filitexta Foerste, Geol. Surv. Ohio Pal., 7, 1893, p. 550, pl. 37A, figs. 6a, b.
Upper Medinan (Brassfield): Huffman's Quarry, near Dayton, Ohio.

Pleurotomaria floridensis Cleland.
Pleurotomaria floridensis Cleland, Bull. Amer. Pal., 3, 1900, p. 125 (253), pl. 15, fig. 12; ibid., 4, 1903, p. 17.
Canadian (Tribes Hill): Fort Hunter and Tribes Hill, New York.

PLEUROTOMARIA GALTENSIS Billings. See Eotomaria galtensis.

Pleurotomaria gregaria Billings.
Pleurotomaria gregaria Billings, Canadian Nat. Geol., 4, 1859, pp. 355, 358, fig. 8h, k; Geol. Canada, Geol. Surv. Canada, 1863, p. 119, fig. 29a–c.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 709, figs.
Canadian (Beekmantown): St. Ann and near St. Eustache, Canada.

Pleurotomaria gonopleura Winchell and Marcy.
Pleurotomaria gonopleura Winchell and Marcy, Mem. Boston Soc. Nat. Hist., 1, 1865, p. 98, pl. 3, fig. 4.
Niagaran (Racine): Chicago, Illinois.

PLEUROTOMARIA HALEI Hall. See Euomphalopterus halei.

PLEUROTOMARIA HALLI Miller. See Raphistoma halli.

Pleurotomaria harpya Billings.
Pleurotomaria Harpya Billings, Pal. Foss. Geol. Surv. Canada, 1865, p. 227.
Canadian (Quebec—G): Cape Norman, Newfoundland.

PLEUROTOMARIA HELENA Billings. See Liospira helena.

PLEUROTOMARIA HERCYNA Whiteaves. See Murchisonia?? billingsana.

PLEUROTOMARIA HERMIONE Koken. See Lophospira? hermione.

PLEUROTOMARIA HORTENSIA Billings. See Raphistoma hortensia.

Pleurotomaria hoyi Hall.
Pleurotomaria hoyi Hall, Rep. Sup. Geol. Surv. Wisconsin, 1861, p. 35; 20th Rep. New York State Cab. Hist., 1868, p. 364, pl. 15, fig. 10.—Chamberlin, Geol. Wisconsin, 1, 1883, p. 193, fig.—Kindle and Breger, 28th Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1904, p. 455.
Pleurotomaria (Trochonema) hoyi Hall, 20th Rep. New York State Cab. Hist., rev. ed., 1870, p. 393, pl. 15, fig. 10; pl. 25, figs. 11, 12.
Niagaran: Racine, Wisconsin (Racine); Delphi, Indiana.

PLEUROTOMARIA HUNTERENSIS Cleland. See Polygyrata hunterensis.

Pleurotomaria hyale Billings.
Pleurotomaria Hyale Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 228.
Canadian (Quebec—F): Keppel Island and Port aux Choix, Newfoundland.

Pleurotomaria? idia Hall.
Pleurotomaria idia Hall, Rep. Sup. Geol. Surv. Wisconsin, 1861, p. 35; 20th Rep, New York State Cab. Hist., 1868, p. 365, pl. 15, figs. 15, 16; rev. ed., 1870. p. 393, pl. 15, figs. 15, 16.—Kindle and Breger, 28th Ann. Rep. Geol. Nat. Res. Indiana, 1904, p. 455, pl. 12, fig. 6.
Niagaran: Racine, Wisconsin (Racine); Huntington, Indiana.

PLEUROTOMARIA IMMATURA Billings. See Raphistoma immaturum.

Pleurotomaria indenta Hall.
Pleurotomaria indenta Hall, Pal. New York, 1, 1847, p. 176, pl. 38, fig. 2.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 161, pl. 5, fig. 5; pl. 17, fig. 8.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 710, fig.
Trenton: Watertown, New York.

Pleurotomaria inexpectans Hall and Whitfield.
Pleurotomaria inexpectans Hall and Whitfield, Geol. Surv. Ohio Pal., 2, 1875, p. 117, pl. 5, fig. 12.—Foerste, Bull. Sci. Lab. Denison Univ., 1, 1885, p. 96; Geol. Surv. Ohio Pal., 7, 1893, p. 549.
Upper Medinan (Brassfield): Todds Fork, Clinton County, Ohio.

PLEUROTOMARIA LABROSA var. OCCIDENS Hall. See Phanerotrema occidens.

PLEUROTOMARIA LAPHAMI Whitfield. See Eotomaria laphami.

PLEUROTOMARIA LAURENTINA Billings. See Raphistomina laurentina.

PLEUROTOMARIA LENTICULARIS of American authors. See Liospira americana and L. vitruvia.

Pleurotomaria lenticularis of authors (not Sowerby).
Pleurotomaria lenticularis Emmons (Conrad MS., not Sowerby), Nat. Hist. New York, Geol., 2, 1842, p. 392, fig. 2; p. 393, figs. 2, 3.—Owen, Geol. Expl. Iowa, Wisconsin, Illinois, 2d ed., 1844, p. 86, pl. 18, fig. 6; Amer. Jour. Sci. Arts, 47, 1844, p. 365, fig. 2.—Hall, Pal. New York, 1, 1847, p. 172, pl. 37, figs. 6a-d.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 160, pl. 6, figs. 13a, b; pl. 17, fig. 13a; Man. Geology, 1860, p. 98, fig. 87.—Lincklaen, 14th Rep. New York State Cab. Nat. Hist., 1861, p. 47, pl. 2, fig. 2.—Nicholson, Rep. Pal. Prov. Ontario, 2, 1875, p. 19, fig. 7d (loc. occ.).—Koken, Neues Jahrb. Min., Geol., Pal., 6, 1889, p. 352.
Raphistoma lenticularis Hall, Rep. Geol. Surv. Wisconsin, 1862, p. 39, fig. 4.—Meek and Worthen, Geol. Surv. Illinois, 3, 1868, p. 316, pl. 3, fig. 7b (a, c?).—Miller, Cincinnati Quart. Jour. Sci., 1, 1874, p. 319.—Whitfield, Geol. Wisconsin, 4, 1882, p. 214, pl. 6, figs. 4, 5.—Chamberlin, Geol. Wisconsin, 1, 1883, p. 157.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, p. 850, figs.—Koken, Neues Jahrb. f. Min., Geol., Pal., 6 Beilage-Band, p. 352.—Miller, N. A. Geol. Pal., p. 424, fig. 708.—Whiteaves, Canadian Rec. Sci., 5, p. 318.—Keyes, Missouri Geol. Surv., 5, 1894, p. 163.—Raymond, Bull. Amer. Pal., 3, 1902, p. 306, pl. 19, figs. 7, 8.
Trochus lenticularis? Owen, Geol. Expl. Iowa, Wisconsin, Illinois, 2d ed., 1844, p. 80, pl. 15, fig. 5.
Middle and Upper Ordovician: United States and Canada.

Observation.—So many distinct species now impossible to determine without an examination of the figured specimens have been described as Pleurotomaria or Raphistoma lenticularis that it is believed useless to try to assign the references to their proper place.

Pleurotomaria litorea Hall.
Pleurotomaria litorea Hall, Pal. New York, 2, 1852, p. 12, pl. 4 bis, figs. 4a, b.—Grabau, Bull. New York State Mus., 45, 1901, p. 212, fig. 142; Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 212, fig. 142.
Upper Medinan: Lockport, New York.

Pleurotomaria lonensis Walcott.
Pleurotomaria Lonensis Walcott, Mon. U. S. Geol. Surv., 8, 1884, p. 80, pl. 11, fig. 22.
Upper Pogonip: Lone Mountain, near Eureka, Nevada.
Cotype.—Cat. No. 17331, U.S.N.M.

Pleurotomaria(?) margaritoides Whiteaves.
Pleurotomaria(?) margaritoides Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 3, 1897, p. 190, pl. 20, fig. 10.
Black River or Richmond: Inmost Island, Lake Winnipeg, Canada.

PLEUROTOMARIA MICULA Hall. See Liospira micula.

Pleurotomaria miser Billings.
Pleurotomaria miser, Billings, Canadian Nat. Geol., 4, 1859, p. 354.
Canadian (Romaine): Mingan Islands, Quebec.

Pleurotomaria missisquoi Billings.
Pleurotomaria Missisquoi Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 191.
Canadian (Beekmantown): Phillipsburg, Quebec.

Pleurotomaria mohawkensis Miller.
Pleurotomaria? nodulosa Hall (not Sandberger, 1842), Pal. New York, 1, 1847, p. 44, pl. 10, fig. 10.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 161.
Pleurotomaria mohawkensis Miller, N. A. Geol. Pal., 1889, p. 421.
Black River: Watertown and Mohawk Valley, New York.

Pleurotomaria muralis Owen.
Pleurotomaria muralis Owen, Rep. Geol. Surv. Wisconsin, Iowa, Minnesota, 1852, p. 581, tab. 2, fig. 6.—Lesley, Geol. Surv. Pennsylvania, Rep. P. 4, 1889, p. 712, fig.—Whiteaves, Canadian Rec. Sci., 5, 1893, p. 319; Pal. Foss., Geol. Surv. Canada, 3, pt. 3, 1897, p. 189.
Richmond: Red River of the North (Lower Fort Garry), Canada.
Holotype.—Cat. No. 17900, U.S.N.M.

PLEUROTOMARIA NASONI Hall. See Eotomaria supracingulata.

PLEUROTOMARIA NIOTA Hall and Whitfield. See Trochonema niota.

PLEUROTOMARIA NODULOSA Hall. See Pleurotomaria mohawkensis.

Pleurotomaria normani Billings.
Pleurotomaria Normani Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 228, fig. 212.
Canadian (Quebec—G): Cape Norman, Newfoundland.

Pleurotomaria? nucleolata Hall.
Pleurotomaria? nucleolata Hall, Pal. New York, 1, 1847, p. 42, pl. 10, figs. 6a, b.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 713, figs.
Black River (Lowville): Watertown, New York.

PLEUROTOMARIA NUMERIA Billings. See Liospira numeria.

Pleurotomaria? obsoleta Hall.
Pleurotomaria? obsoleta Hall, Pal. New York, 1, 1847, p. 44, pl. 10, fig. 11.
Black River (Lowville): Watertown, New York.

PLEUROTOMARIA OCCIDENS Hall and Whitfield. See Phanerotrema occidens.

PLEUROTOMARIA OHIOENSIS James. See Lophospira ohioensis.

PLEUROTOMARIA PAUPER Hall. See Trochonema pauper.

PLEUROTOMARIA PAUPER Billings. See Raphistoma stamineum.

PLEUROTOMARIA PERCARINATA Hall. See Gyronema percarinatum.

PLEUROTOMARIA PERLATA Hall. See Liospira perlata.

PLEUROTOMARIA PERVETUSTA Hall. See Euconia(?) pervetusta.

Pleurotomaria postumia Billings.
Pleurotomaria Postumia Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 91 (adv. sheets, 1862).
Canadian?: Point Levis (Levis—erratics) and Phillipsburg, Quebec.

PLEUROTOMARIA PROGNE Billings. See Liospira progne.

Pleurotomaria? quadricarinata Hall.
Pleurotomaria quadricarinata Hall, Pal. New York, 1, 1847, p. 43, pl. 10, fig. 8.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 160.
Black River (Lowville): Watertown, New York.

Pleurotomaria (Euconia?) quebecensis (Billings).
Pleurotomaria Quebecensis Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 190, figs. 172–174.
Ozarkian? (Levis—erratics): Point Levis, Quebec.

PLEUROTOMARIA RACINENSIS Whitfield. See Mourlonia racinensis.

PLEUROTOMARIA RAMSAYI Billings. See Euconia ramsayi.

PLEUROTOMARIA ROTULOIDES Hall. See Raphistoma rotuloides.

Pleurotomaria rotundispira Billings.
Pleurotomaria rotundispira Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 191.
Ozarkian? (Levis—erratics): Point Levis, Quebec.

Pleurotomaria (Eotomaria?) selecta Billings.
Pleurotomaria selecta Billings, Pal. Foss., Geol. Surv. Canada, 1865, p. 224, fig. 208.
Chazyan (Quebec—H, I, K, L): Table Head, Newfoundland.

PLEUROTOMARIA SEMELE Hall. See Plethospira semele.

Pleurotomaria sigaretoides Winchell and Marcy.
Pleurotomaria sigaretoides Winchell and Marcy, Mem. Boston Soc. Nat. Hist., 1, 1865, p. 98, pl. 3, fig. 5.
Niagaran (Racine): Chicago, Illinois.

PLEUROTOMARIA SOLARIOIDES Hall. See Pycnomphalus solarioides.

PLEUROTOMARIA SOLARIOIDES Billings. See Liospira perlata.

Pleurotomaria sponsa Billings.
Pleurotomaria sponsa Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 226.
Chazyan (Quebec—N): Table Head, Newfoundland.

Pleurotomaria stokesiana Whiteaves.
Pleurotomaria Stokesiana Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 3, 1897, p. 190, pl. 20, figs. 9, 9a.
Black River or Richmond: West shore of Lake Winnipeg, opposite north end of Selkirk Island, Canada.

PLEUROTOMARIA STRIATA Miller. See Plethospira striata.

PLEUROTOMARIA SUBCONICA Hall. See Clathrospira subconica.

Pleurotomaria subdepressa Hall.
Pleurotomaria subdepressa Hall, Pal. New York, 2, 1852, p. 333 pl. 76, fig. 2a, b.
Cayugan (Cobleskill): Schoharie, New York.

PLEUROTOMARIA SUBTILISTRIATA Hall. See Liospira subtilistriata.

PLEUROTOMARIA SUPRACINGULATA Billings. See Eotomaria supracingulata.

PLEUROTOMARIA SYBILLINA Billings. See Lophospira sybillina.

PLEUROTOMARIA THALIA Billings. See Cyclonema thalia.

PLEUROTOMARIA TRILINEATA James. See Lophospira ohioensis.

PLEUROTOMARIA TROPIDOPHORA Miller. See Lophospira tropidophora.

Pleurotomaria townsendii Whiteaves.
Pleurotomaria Townsendii Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 2, 1895, p. 77, pl. 15, fig. 9; Geol. Surv. Canada, Pal. Foss., 3, pt. 4, 1906, p. 336.
Niagaran (Guelph): Durham, Ontario.

PLEUROTOMARIA TURGIDA Hall. See Sinuopea turgida.

PLEUROTOMARIA UMBILICATA Hall. See Trochonema umbilicatum.

Pleurotomaria (Eccyliomphalus?) vagrans (Billings).
Pleurotomaria vagrans Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 90, fig. 82 (adv. sheets, 1862).
Ozarkian? (Levis—erratics): Point Levis, Quebec.

PLEUROTOMARIA VALERIA Billings. See Euomphalopterus valeria.

PLEUROTOMARIA VARICOSA Emmons. See Murchisonia? varicosa.

PLEUROTOMARIA VELARIS Whiteaves. See Euomphalopterus velaris.

PLEUROTOMARIA VENTRICOSA Miller. See Seelya ventricosa.

PLEUROTOMARIA VIOLA Billings. See Poleumita viola.

Pleurotomaria virgo Billings.
Pleurotomaria virgo Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 224, fig. 207.
Chazyan (Quebec—H, I, K, L): Table Head, Newfoundland.

Pleurotomaria virguncula Billings.
Pleurotomaria virguncula Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 225, fig. 209.
Chazyan (Quebec—H, I, K, L): Table Head, Newfoundland.

PLEUROTOMARIA VITRUVIA Billings. See Liospira vitruvia.

PLEUROTROCHUS Grabau. Genotype: P. tricarinatus Grabau.
Pleurotrochus Grabau, Michigan Geol. Surv., Geol. Ser., 1, 1909, p. 179.

Pleurotrochus tricarinatus Grabau.
Pleurotrochus tricarinatus Grabau, Michigan Geol. Surv., Geol. Ser., 1, 1909, p. 180, pl. 27, figs. 1, 2; pl. 16, fig. 5.
Upper Monroan (Lucas): Salt shaft, Detroit, Michigan.

PLIOMERA Raymond (not Angelin). See Pliomerops Raymond.

PLIOMERA CANADENSIS Grabau and Shimer. See Pliomerops canadensis.

PLIOMEROPS Raymond. Genotype: Amphion canadensis Billings.
Pliomera Raymond (not Angelin), Amer. Jour. Sci., 4th ser., 19, 1905, p. 377.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 321.
Pliomerops Raymond, Amer. Jour. Sci., 4th ser., 19, 1905, p. 378; Zittel-Eastman Textb. Pal., 1913, p. 725.

Pliomerops barrandei (Billings).
Amphion Barrandei Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 288, fig. 277, a, b.
Pliomerops barrandei Raymond, Ann. Carnegie Mus., 7, 1910, p. 76, fig. 7.
Chazyan (Quebec—I, K, N, P): Point Rich, Table Head, Bonne Bay, etc., Newfoundland.

Pliomerops canadensis (Billings).
Amphion Canadensis Billings, Canadian Nat. Geol., 4, 1859, p. 381, fig. 12; Geol. Canada, Geol. Surv. Canada, 1863, p. 133, fig. 69; Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 288, fig. 278.—Miller, N. A. Geol. Pal., 1889, p. 527, fig. 956.—Raymond, Ann. Carnegie Mus., 3, 1905, p. 363, pl. 14, figs. 10-13.
Cf. Calymene multicosta Hall, Pal. New York, 1, 1847, p. 228, pl. 60, fig. 3.
Pliomera canadensis Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 321, fig. 1634a–c.
Pliomerops canadensis Raymond, Amer. Jour. Sci., 19, 1905, p. 378 (gen. ref.); Ann. Carnegie Mus., 7, 1910, p. 75, pl. 18, fig. 14, figs. 4–6; 7th Rep. Vermont State Geol., 1910, p. 238, pl. 36, figs. 10–13; pl. 38, fig. 14.—Perkins, Rep. Vermont State Geol., 8th ser., 1912, pl. 18, fig. 14.
Chazyan: Mingan Islands (Mingan) and Montreal, Canada; Valcour Island, Chazy, etc., New York; Isle La Motte, Vermont.

Pliomerops? convexus (Billings).
Amphion convexus Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 322.
Canadian (Beekmantown): Stanbridge, Quebec.

Pliomerops? insularis (Billings).
Amphion insularis Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 290.
Canadian (Quebec—G): Port aux Choix, Newfoundland.

Pliomerops? julius (Billings).
Amphion Julius Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 290, fig. 279.
Chazyan (Quebec—P): Cow Head, Newfoundland.

Pliomerops? nevadensis (Walcott).
Amphion Nevadensis Walcott, Mon. U. S. Geol. Surv., 8, 1884, p. 94, pl. 12, fig. 13.
Upper Pogonip: Eureka and White Pine Districts, Nevada.
Cotypes.—Cat. No. 24645, U.S.N.M.

Pliomerops? salteri (Billings).
Amphion Salteri Billings, Canadian Nat. Geol., 1861, p. 322, fig. 6; Geol. Canada, Geol. Surv. Canada, 1863, p. 278, fig. 284a, b; Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 352, fig. 339.
Canadian (Beekmantown): Phillipsburg, Quebec.

Pliomerops? westoni (Billings).
Amphion Westoni Billings, Pal. Foss., 1, Geol. Surv., Canada, 1865, p. 321, fig. 307, a, b.
Canadian (Beekmantown): Stanbridge, Quebec.

PLUMULITES GRACILLIMUS Lesley. See Turrilepas gracillimus.

PLUMULITES JAMESI Hall and Whitfield. See Lepidocoleus jamesi

PODOLITHUS Sardeson. Genotype: P. strophocrinus Sardeson.
Podolithus Sardeson, Jour. Geol., 16, 1908, p. 242.
Observation.—Founded upon crinoid bases or roots. The necessity of giving separate names to such objects and the value of such work is not apparent. The author creates the genus and species knowing that these organisms are only bases of associated crinoids.

Podolithus anomalocrinus Sardeson.
Podolithus anomalocrinus Sardeson, Jour. Geol., 16, 1908, p. 246.
Trenton: Dodge County, Minnesota.

Podolithus dendrocrinus Sardeson.
Podolithus dendrocrinus Sardeson, Jour. Geol., 16, 1908, p. 248.
Black River and Trenton: St. Paul, Minnesota.

Podolithus eucheirocrinus Sardeson.
Podolithus eucheirocrinus Sardeson, Jour. Geol., 16, 1908, p. 247.
Black River and Trenton: St. Paul, Minnesota.

Podolithus schizocrinus Sardeson.
Podolithus schizocrinus Sardeson, Jour. Geol., 16, 1908, p. 244.
Black River: Minnesota.

PODOLITHUS STROPHOCRINUS Sardeson. See Carabocrinus dicyclicus.

POLEUMITA Clarke and Ruedemann.
Genotype: P. scamnata Clarke and Ruedemann.
Euomphalus (part) Sowerby, Min. Conch., 1, 1814, p. 97.
Orisotoma (part) Lindstrom (not Munier Chalmas, 1876), Silur. Gastrop. and Pterop. Gotland, 1884, p. 156.
Horiostoma Fischer, Manuel Conch., etc., 1885, p. 813.
Omphalotrochus Lindstrom (not Meek), Sil. Gast. and Pter. Gotland, 1884, p. 156.—Eastman, Textb. Pal., 1, 1900, p. 447.
Polytropis Dekoninck (not Sandberger, 1874), Fauna Carbon., 2, pt. 3, 1881, p. 107.—Koken, Neues Jahrb. Min., Geol. Pal., 6, Beilage-Band, 1889, p. 425.—Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 2, 1895, p. 89.—Koken, Die Leitfossilien, Leipzig, 1896, pp. 126, 459, fig. 244; Neues Jahrb. Min., Geol. Pal., 1, 1898, p. 24.
Poleumita Clarke and Ruedemann, Mem. New York State Mus., 5, 1903, p. 59.—Whiteaves, Geol. Surv. Canada, Pal. Foss., 3, pt. 4, 1906, p. 337.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 667.
Polytropina Donald, Quart. Jour. Geol. Soc. London, 61, 1905, p. 575.

Poleumita bellasculptilis Savage.
Poleumita bellasculptilis Savage, Bull. Geol. Surv. Illinois, 23, 1913, p. 101, pl. 6, fig. 3.
Upper Medinan (Edgewood): Pike County, Missouri.

Poleumita crenulata (Whiteaves).
Straparollus crenulatus Whiteaves, Geol. Surv. Canada, Pal. Foss., 3, pt. 2, 1884, p. 21, pl. 3, figs. 8a–b.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 18 p. 1079, figs.
Poleumita crenulata Clarke and Ruedemann, Mem. New York State Museum, 1903, p. 64, pl. 9, figs. 9, 11, 16–24.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 667, fig. 924a.
Polytropis crenulatus Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 2, 18 p. 91.
Poleumita cf. crenulata Grabau, Michigan Geol. Surv., Geol. Ser., 1, 1909, p. 1 pl. 16, fig. 27.
Niagaran (Guelph): Durham, Ontario; Shelby and Rochester, New York.
?Upper Monroan (Lucas): Salt shaft, Detroit, Michigan.

Poleumita durhamensis (Whiteaves).
Polytropis Durhamensis Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 2, 18 p. 91, pl. 14, figs. 1 and 2.
Poleumita durhamensis Whiteaves, Geol. Surv. Canada, Pal. Foss., 3, pt. 4, 1 p. 338 (gen. ref.).
Niagaran (Guelph): Near Durham, Ontario.

Poleumita hudsonica Parks.
Gyronema or Poleumita hudsonica Parks in Tyrrell, 22d Rep. Ontario Bu Mines, 1913, p. 36.
Niagaran (Guelph): Severn River, Ontario.

Poleumita huntingtonensis (Kindle and Breger).
Oriostoma huntingtonensis Kindle and Breger, 28th Ann. Rep. Dep. Geol. N Res. Indiana, 1904, p. 463, pl. 14, figs. 14, 15.
Niagaran: Huntington, Indiana.

Poleumita huntingtonensis alternata (Kindle and Breger).
Oriostoma huntingtonensis var. alternatum Kindle and Breger, 28th Ann. Re Dep. Geol. Nat. Res. Indiana, 1904, p. 465, pl. 14, fig. 9.
Niagaran: Huntington, Indiana.
Holotype.—Cat. No. 52943, U.S.N.M.

Poleumita macrolineata (Whitfield).
Eomphalus macrolineatus Whitfield, Ann. Rep. for 1877, Wisconsin Geol. Sur 1878, p. 82; Geol. Wisconsin, 4, 1882, p. 294, pl. 18, figs. 5, 6.—Whiteav Pal. Foss., Geol. Surv. Canada, 3, pt. 1, 1884, p. 20, pl. 3, fig. 6.
Polytropis macrolineatus Whiteaves, ibid., 3, pt. 2, 1895, p. 91.
Poleumita macrolineata Whiteaves, ibid., 3, pt. 4, 1906, p. 338 (gen. ref.).
Niagaran: Manitowoc Rapids, Wisconsin; Elora and Durham, Ontario (Guelp

Poleumita parvula (Whiteaves).
Polytropis parvulus Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 2, 18 p. 92, pl. 13, figs. 10, 10a.

Poleumita parvula—Continued.

Poleumita parvula Whiteaves, Geol. Surv. Canada, Pal. Foss., 3, pt. 4, 1906, p. 338 (gen. ref.).

Niagaran (Guelph): Durham, Ontario.

Poleumita plana (Kindle and Breger).

Oriostoma plana Kindle and Breger, 28th Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1904, p. 465, pl. 14, figs. 7, 8.

Niagaran: Georgetown, Indiana.

Poleumita rugælineata (Hall and Whitfield).

Euomphalus (Cyclonema) rugælineata Hall and Whitfield, 24th Rep. New York State Cab. Nat. Hist., 1872, p. 186; 27th Rep. New York State Cab. Nat. Hist., 1875, pl. 13, fig. 2.

Cyclonema rugælineata Nettelroth, Kentucky Foss. Shells, Geol. Surv. Kentucky, 1889, p. 187, pl. 33, fig. 21.

Niagaran (Louisville): Louisville, Kentucky.

Plesiotype.—Cat. No. 51362, U.S.N.M

Poleumita scamnata Clarke and Ruedemann.

Poleumita scamnata Clarke and Ruedemann, Mem. New York State Mus., 5, 1903, p. 60, pl. 9, figs. 1-8, 10, 12-15.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 667, fig. 924b.

Niagaran (Guelph): Shelby and Rochester, New York.

Poleumita? sulcata (Hall).

Euomphalus sulcatus Hall, Geol. New York, 4, 1843, p. 137, fig. 4, p. 138; tab. ill. 25, fig. 4.—Owen, Amer. Jour. Sci. Arts, 2d ser., 1, 1846, p. 46, fig. 4.—Hall, Pal. New York, 2, 1852, p. 340, fig. 4.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 232, figs.

Cyclonema sulcata Hall, Pal. New York, 2, 1852, p. 347, pl. 84, figs. 1a-d.—Billings, Geol. Canada, Geol. Surv. Canada, 1863, p. 343, fig. 350.—Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 1, 1884, p. 18, pl. 3, fig. 5.

Polytropis sulcatus Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 2, 1895, p. 89, pl. 13, figs. 9, 9a.

Poleumita(?) sulcata Clarke and Ruedemann, Mem. New York State Mus., 5, 1903, p. 62, pl. 10, fig. 1-4.

Poleumita sulcata Whiteaves, Geol. Surv. Canada, Pal. Foss., 3, pt. 4, 1906, p. 337.

Niagaran (Guelph): Newark, Wayne County, Shelby, and Rochester, New York; Galt, Hespeler, etc., Ontario.

Poleumita viola (Billings).

Pleurotomaria? Viola Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 169.—Whiteaves, ibid., 3, pt. 2, 1895, p. 76, pl. 12, fig. 2; ibid., pt. 4, 1906, p. 336.

Niagaran (Guelph): Galt, Ontario.

POLLICIPES Aurivillius.

Pollicipes Aurivillius, Bihang till K. Sv. Vet.-Akad. Handl., 18, Afd. 4, No. 3, 1892, p. 4.—Clarke, Zittel-Eastman Textb. Pal., 1, 1900, p. 650.; ibid., 2d ed., 1913, p. 745.

Pollicipes siluricus Ruedemann.

Pollicipes siluricus Ruedemann, Bull. New York State Mus., 42, 1901, p. 578, pl. 2, figs. 16-24; Bull. New York State Mus., 162, 1912, p. 122, pl.

Trenton (Snake Hill): Green Island and Mechanicsville, New York.

POLYCOPE SUBLENTICULARIS Jones. See Schmidtella sublenticularis.

POLYDILASMA Hall. See Zaphrentis Rafinesque.

POLYGNATHUS Hinde. Genotype: P. dubius Hinde.
Polygnathus Hinde, Quart. Jour. Geol. Soc. London, 1879, p. 361.—Miller, N. A. Geol. Pal., 1889, p. 520.—Grabau, Bull. Buffalo Soc. Nat. Sci., 6, 1899, p. 153.

Polygnathus wilsoni James.
Polygnathus wilsoni James, Jour. Cincinnati Soc. Nat. Hist., 7, 1884, p. 148, pl. 7, fig. c.
Maysville (Corryville): Warren County, Ohio.

POLYGYRATA Weller. Genotype: P. sinistra Weller.
Polygyrata Weller, Geol. Surv. New Jersey, Pal., 3, 1903, p. 130.

Polygyrata hunterensis (Cleland).
Pleurotomaria hunterensis Cleland, Bull. Amer. Pal., 3, 1900, p. 124 (252), pl. 17, figs. 1, 2, 7, 8; ibid., 4, 1903, p. 16, pl. 4, figs. 1, 2.
Polygyrata hunterensis Weller, Geol. Surv. New Jersey, Pal., 3, p. 130 (gen. ref.).
Canadian (Tribes Hill): Ft. Hunter, Tribes Hill, Little Falls, etc., New York.

Polygyrata polygyrata (Roemer).
Euomphalus polygyratus Roemer, Texas, Bonn, 1849, p. 421; Kreidebildungen von Texas, Bonn, 1852, p. 91, pl. 11, figs. 4a, 4b.
Polygyrata polygyratus Weller, Geol. Surv. New Jersey, Pal., 3, 1903, p. 130 (gen. ref.).
Canadian (Beekmantown): San Saba Valley, Texas.

Polygyrata rotuliformis (Meek).
Euomphalus (Raphistoma) rotuliformis Meek, Proc. Acad. Nat. Sci. Philadelphia, 1870, p. 61.
Raphistoma? rotuliformis Meek, U. S. Geol. Expl., 40th Parl., 4, 1877, p. 18, pl. 1, figs. 2a–b.
Polygyrata rotuliformis Weller, Geol. Surv. New Jersey, Pal., 3, 1903, p. 130 (gen. ref.).
Canadian (Beekmantown): Muddy Creek, Nevada.
Cotypes.—Cat. No. 17316, U.S.N.M.

Polygyrata sinistra Weller.
Polygyrata sinistra Weller, Geol. Surv. New Jersey, Pal., 3, 1903, p. 130, pl. 4, figs. 1, 2.
Canadian (Beekmantown): Columbia, New Jersey.

Polygyrata trochiscus (Meek).
Euomphalus (Raphistoma?) trochiscus Meek, Proc. Acad. Nat. Sci. Philadelphia, 1870, p. 61.
Raphistoma? trochiscus Meek, U. S. Geol. Expl., 40th Parl., 4, 1877, p. 19, pl. 1, figs. 3, 3a, 3b.—White, Rep. U. S. Geogr. Surv., West 100th Merid., 4, War Dep., 1877, p. 77, pl. 4, fig. 13a–c.
Polygyrata trochiscus Weller, Geol. Surv. New Jersey, Pal., 3, 1903, p. 130 (gen. ref.).
Canadian (Beekmantown): Muddy Creek, Nevada.
Cotypes.—Cat. No. 17315, U.S.N.M.

POLYOROPHE Lindström. Genotype: P. glabra Lindström.

Polyorophe Lindström, Ofvers K. Vet.-Akad. Forhandl., 39, No. 3, 1882, pp. 16, 20; Bihang till K. Sv. Vet.-Akad. Handl., 8, 1883, p. 12; ibid., 21, Afd. 4, No. 7, 1896, p. 43.

Polyorophe radicula Foerste.

Polyorophe radicula Foerste, Bull. Kentucky Geol. Surv., 7, 1906, p. 313, pl. 5, figs. 3a–e.

Clinton (Waco): Near Estill Springs, north of Irvine, Kentucky.

POLYPHEMOPSIS Portlock. See Subulites Conrad.

POLYPORA McCoy. Genotype: P. dendroides McCoy.

Polypora McCoy, Synopsis Carbon. Foss. Ireland, 1845, p. 206.—D'Orbigny, Prodr. de Pal., 1, 1850, p. 45.—Hall, Pal. New York, 2, 1852, p. 167.—McCoy, British Pal. Foss., 1854, p. 115.—Pictet, Traite de Pal., 2d ed., 4, 1857, p. 166.—Eichwald, Lethæa Rossica, 1, 1860, p. 372.—Nicholson, Pal. Province, Ontario, 1874, p. 98.—Etheridge, Jun., Proc. Geol. Assoc., 4, 1875, p. 120.—Zittel, Handb. Pal., 1, 1880, p. 601.—Vine, Rep. British Assoc. Adv. Sci., 1881, p. 170; Geol. Mag., dec. 2, 7, 1881, p. 513.—Ulrich, Jour. Cincinnati Soc. Nat. Hist., 5, 1882, p. 150.—Claypole, Quar. Jour. Geol. Soc. London, 39, 1883, p. 31.—Vine, Rep. 53d Meeting British Assoc. Adv. Sci., 1884, p. 194.—Hall, Rep. State Geol. New York for 1884, 1885, p. 35.—Vine, Proc. Yorkshire Geol. Polyt. Soc., 9, 1885, p. 86.—Waagen and Pichl, Pal. Indica, ser. 13, 1885, pp. 774, 781.—Ulrich, Contr. Amer. Pal., 1, 1886, p. 5.—Foerste, Bull. Sci. Lab. Denison Univ., 2, 1887, p. 82.—Hall and Simpson, Pal. New York, 6, 1887, p. 24.—Miller, N. A. Geol. Pal., 1889, p. 315.—Ulrich, Geol Sur. Illinois, 8, 1890, pp. 396, 585.—Počta, Syst. Sil. Bohême, 8, 1, 1894, p. 84.—Simpson, 13th Ann. Rep. State Geol. New York for 1893, 1895, pp. 699, 724; 47th Ann. Rep. New York State Mus., pp. 893, 918.—Whidborne, Devon. Fauna England (Pal. Soc. Pub., 49), 2, pt. 4, 1895, p. 174.—Ulrich, Zittel's Textb. Pal. (Engl. ed.), 1896, p. 282.—Simpson, 14th Ann. Rep. State Geol. New York for 1894, 1897, pp. 502, 520.—Grabau, Bull. Buffalo Soc. Nat. Sci., 6, 1899, p. 162.—Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 39, 357.—Grabau, Bull. New York State Mus., 45, 1901, p. 172; Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 172.—Condra, Nebraska Geol. Surv., 2, pt. 1, 1903, p. 67.—Cumings, Amer. Jour. Sci., 4th ser., 17, 1904, p. 49, 70.—Bassler, Bull. U. S. Geol. Surv., 292, 1906, p. 52.—Cumings, 30th Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1906, p. 1283.—Hennig, Archiv. für Zool., K. Sven. Vet.-Akad. Stockholm, 3, No. 10, 1906, p. 12.—Bassler, Bull. U. S. Geol. Surv., 292, 1906, p. 52.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 148.—Bassler, Zittel-Eastman Textb. Pal., 1913, p. 341.

Protoretopora Zittel, Handb. Pal., 1, 1880, p. 602.—Etheridge, Proc. Royal Phys. Soc. Edinburgh, 5, 1880, p. 275.

Polyporella Simpson, 13th Ann. Rep. State Geol. New York for 1893, 1895, pp. 700, 725; 47th Ann. Rep. New York State Mus., pp. 894, 919; 14th Ann. Rep. State Geol. New York for 1894, 1897, pp. 502, 520.

Flabelliporella Simpson, 13th Ann. Rep. State Geol. New York for 1893, 1895, pp. 703, 725; 47th Ann. Rep. New York State Mus., pp. 897, 919; 14th Ann. Rep. State Geol. New York for 1894, 1897, pp. 502, 521.

Protoretepora De Koninck, Rech. sur les Foss. Pal. de la Nouv. Galles du Sud, 3, 1876, p. 176; 1898, Engl. trans., Mem. Geol. Sur. New South Wales, Pal. No. 6, p. 136.

Polypora albionensis Spencer. Recogniza
Polypora (Fenestella?) albionensis Spencer, Trans. St. Louis Acad. Sci., 4,
p. 605, pl. 7, figs. 5, 5a; Bull. Mus. Univ. State Missouri, 1, 1884, p. 55,
figs. 5, 5a.
Niagaran: Six miles east of Hamilton, Ontario.

Polypora conferta (Hall).
Fenestella conferta Hall, Trans. Albany Institute, 10, 1883, p. 63 (abstract
p. 7); 11th Ann. Rep. Indiana Geol. Nat. Hist., 1882, p. 252.
Niagaran (Waldron): Waldron, Indiana.

Polypora dictyota Ulrich and Bassler.
Polypora dictyota Ulrich and Bassler, Maryland Geol. Surv., Low. Dev.,
283, pl. 47, fig. 3.
Helderbergian (Keyser): Cumberland, Maryland.
Holotype.—Cat. No. 60742, U.S.N.M.

Polypora incepta Hall.
Polypora incepta Hall, Pal. New York, 2, 1852, p. 167, pl. 40D, figs. 5a–f.–
Traite de Pal., 2d ed., 4, 1857, p. 166, pl. 92, fig. 15.—Ulrich, Geo
Illinois, 8, 1890, p. 358, pl. 55, fig. 1.—Grabau, Bull. New York Sta
45, 1901, p. 172, fig. 73; Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 172,
Bassler, Bull. U. S. Geol. Surv., 292, 1906, p. 52, pl. 19, figs. 8–13.–
and Shimer, N. A. Index Fossils, 1, 1907, p. 148, fig. 204.
Clinton (Rochester): Rochester and Lockport, New York; Grimsby, Onta
Plesiotype.—Cat. No. 44074, U.S.N.M. (Ulrich).

Polypora punctostriata (Hall).
Fenestella punctostriata Hall, 28th Ann. Rep. New York State Mus. (d
1876, pl. 12, figs. 15, 16; mus. ed., 1879, p. 125, pl. 12, figs. 15, 16; 11
Rep. Indiana Geol. Nat. Hist., 1882, p. 251, pl. 11, figs. 15, 16.
Niagaran (Waldron): Waldron, Indiana.

Polypora tantula (Hall).
Fenestella tantulus Hall, Trans. Albany Institute, 10, 1883, p. 64 (abstra
p. 8); 11th Ann. Rep. Indiana Geol. Nat. Hist., 1882, p. 253.
Niagaran (Waldron): Waldron, Indiana.

POLYPORELLA Simpson. See Polypora McCoy.

POLYTŒCHIA Hall and Clarke. Genotype: Hemipronites apicalis W
Polytœchia Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 239, figs
11th Ann. Rep. New York State Geol., 1894, p. 275.—Miller, N. A. Ge
1st App., 1892, p. 690.—Schuchert, Zittel-Eastman Textb. Pal., 1, 190
ibid., 2d ed., 1913, p. 393.—Walcott, Proc. U. S. Nat. Mus., 28, 1905

Polytœchia apicalis (Whitfield).
Hemipronites apicalis Whitfield, Bull. American Mus. Nat. Hist., 2, 188
pl. 24, figs. 1–5.—Seely, Vermont State Geol., Rep. 7, 1910, pl. 62,
Polytœchia apicalis Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p.
11, 12, pl. 7A, figs. 26–30.
Canadian (Beekmantown): Fort Cassin, Vermont.

POLYTŒCHIA? MONTANENSIS Walcott. See Clarkella montanensis.

POLYTOMURUS Hawle and Corda. See Dionide Barrande.

POLYTROPINA Donald. See Poleumita Clarke and Ruedemann.

POLYTROPIS Dekoninck. See Poleumite Clarke and Ruedemann.

PONTOBDELLOPSIS Ruedemann. Genotype: P. cometa Ruedemann.
Pontobdellopsis Ruedemann, Bull. New York State Mus., 42, 1901, p. 574.

Pontobdellopsis cometa Ruedemann.
Pontobdellopsis cometa Ruedemann, Bull. New York State Mus., 42, 1901, p. 574, pl. 1, figs. 14–18.
Trenton (Snake Hill): Rural Cemetery, near Albany, New York.

PONTOCYPRIS Sars. Genotype: P. serrulata Sars.
Pontocypris Sars, Oversigt af Norges Marine Ostracoder, 1865, p. 15.—Brady, Intellectual Observer, 12, London, 1867, p. 118.—Ulrich, Zittel-Eastman Textb. Pal., 1, 1900, p. 646.—Bassler, ibid., 2d ed., 1913, p. 740.

Pontocypris arcuata Ulrich and Bassler.
Pontocypris arcuata Ulrich and Bassler, Maryland Geol. Surv., Low. Dev., 1913, p. 541, pl. 98, figs. 23–25.
Helderbergian (Keyser): Cumberland, Maryland.
Holotype.—Cat. No. 53288, U.S.N.M.

Pontocypris(?) illinoisensis Ulrich.
Pontocypris(?) illinoisensis Ulrich, Jour. Cincinnati Soc. Nat. Hist., 13, 1890, p. 107, pl. 10, figs. 16a–c.
Richmond (Maquoketa): Savannah, Illinois.
Holotype.—Cat. No. 41333, U.S.N.M.

Pontocypris mawi breviata Jones.
Pontocypris mawii var. breviata Jones, Ann. Mag. Nat. Hist., 6th ser., 4, p. 269, pl. 15, fig. 4.—Ulrich and Bassler, Maryland Geol. Surv., Low. Dev., 1913, p. 541, pl. 98, figs. 26–28.
Silurian: Gotland.
Helderbergian (Keyser): Cumberland, Maryland.
Cotypes.—Cat. No. 53287, U.S.N.M.

PORAMBONITES OBSCURUS Hall and Whitfield. See Parastrophia(?) obscura.

PORAMBONITES? OTTAWAENSIS Billings. See Rhynchotrema ottawaense.

PORCELLIA (part) of authors. See Oxydiscus Koken.

PORCELLIA ORNATA Sharpe. See Cyrtolites ornatus.

PORCELLIA SENEX Winchell and Marcy. See Platyceras senex.

PORITES? ASTRAFORMIS Owen. See Plasmopora follis.

PORITES INORDINATA Lonsdale. See Heliolites inordinata.

PORITES MEGASTOMA McCoy. See Heliolites megastoma.

PORITES PETALLIFORMIS Lonsdale. See Plasmopora petaliformis.

PORITES? VETUSTA Hall. See Protaræa vetusta.

POROCRINUS Billings. Genotype: P. conicus Billings.
Porocrinus Billings, Geol. Surv. Canada, Rep. Progr. for 1853–56, 1857, p. 279; Geol. Surv. Canada, dec. 4, 1859, p. 33, fig. 13.—Meek and Worthen, Proc. Acad. Nat. Sci. Philadelphia, 1865, p. 145; Geol. Surv. Illinois, 3, 1868, p. 329.—Zittel, Handb. Pal., 1, Munich, 1879, p. 420.—Grant, Trans. Ottawa Field Nat. Club, 1, 1881, p. 42.—Miller, N. A. Geol. Pal., 1889, p. 273; Zittel-

POROCRINUS—Continued.

Eastman Textb. Pal., 1, 1900, p. 184.—Bather, Treatise on Zool., pt. 3, Echinoderma, London, 1900, p. 172, fig. 86.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 473.—Springer, Zittel-Eastman Textb., Pal., 2d ed., 1913, p. 217.

Porocrinus conicus Billings.

Porocrinus conicus Billings, Geol. Surv. Canada, Rep. Progr. for 1853–56, 1857, p. 279; Geol. Surv. Canada, dec. 4, 1859, p. 34, pl. 2, figs. 5a–d.—Zittel, Handb. Pal., 1, Munich, 1879, p. 420, fig. 296a.—Miller, N. A. Geol. Pal., 1889, p. 273, fig. 400.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 474.—Springer, Geol. Surv. Canada, Mem. 15P, 1911, p. 41 (loc. occ.).

Trenton (Curdsville): Ottawa and Kirkfield, Ontario.

Porocrinus crassus Meek and Worthen.

Porocrinus crassus Meek and Worthen, Proc. Acad. Nat. Sci. Philadelphia, 1865, p. 145; Geol. Surv. Illinois, 3, 1868, p. 330, figs. A, B, pl. 4, figs. 2a, b.—Miller, N. A. Geol. Pal., 1889, p. 273, figs. 401, 402.

Richmond (Maquoketa): Oswego, Kendall County, Illinois.

Porocrinus kentuckiensis Miller and Gurley.

Porocrinus kentuckiensis Miller and Gurley, Bull. Illinois State Mus. Nat. Hist., 5, 1894, p. 24, pl. 2, fig. 19.—Miller, N. A. Geol. Pal., 2d App., 1897, p. 751, fig. 1380.

Trenton (Curdsville): Mercer County, Kentucky.

Porocrinus pentagonius Meek and Worthen.

Porocrinus pentagonius Meek and Worthen, Proc. Acad. Nat. Sci. Philadelphia, 1865, p. 146; Geol. Surv. Illinois, 3, 1868, p. 332, pl. 1, fig. 3.

Black River (Platteville): Dixon, Illinois.

Porocrinus shawi Schuchert.

Porocrinus shawi Schuchert, Proc. U. S. Nat. Mus., 22, 1900, p. 155, pl. 12, figs. 1–3.

Mohawkian: Head of Frobisher Bay, Baffin Land.

Holotype.—Cat. No. 28145, U.S.N.M.

Porocrinus smithi Grant.

Porocrinus Smithi Grant, Trans. Ottawa Field Nat. Club, 1, 1881, p. 42, pl. figs. 1–8.—Bather, Treatise on Zool., pt. 3, Echinoderma, London, 1900, p. 173, fig. 86.

Trenton: Belleville, Ontario.

POSIDONIA ALATA Hall. See Cyrtodonta? alata.

POSIDONOMYA ALATA Miller. See Cyrtodonta? alata.

POSIDONOMYA AMYGDALINA Emmons. See Ambonychia amygdalina.

POSIDONOMYA BELLISTRIATA Emmons. See Ambonychia bellistriata.

POSIDONOMYA OBTUSA Emmons. See Cyrtodonta obtusa.

POSIDONOMYA ORBICULARIS Emmons. See Ambonychia orbicularis.

POSIDONOMYA? RHOMBOIDEA Hall. See Pterinopecten? rhomboideum.

POSIDONOMYA SUBUNDATA Emmons. See Clionychia undata.

POTERIOCERAS McCoy. Genotype: P. ellipticum McCoy.

Poterioceras McCoy, Syn. Carb. Foss. Ireland, 1844, p. 10.—Saemann, Palæontographica, 3, 1852, p. 157.—McCoy, British Pal. Rocks Foss., 1854, p. 321.—Blake, Mon. British Foss. Cephalopoda, 1882, p. 57.—Foord, Cat. Foss. Ceph. British Mus., 1, 1888, p. 256.—Whidborne, Mon. Dev. Fauna South England, 1, Pal. Soc., 1890, p. 112.—Miller, N. A. Geol. Pal., 1st App., 1892, p. 697.—Foord, Mon. Carb. Cephalopoda Ireland, Pal. Soc., 1898, p. 47.—Hyatt, Zittel-Eastman Textb. Pal., 1, 1900, p. 530.—Foord, Mon. Carb. Ceph. Ireland, pt. 5, Pal. Soc., App., 1903, p. 213.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 126.—Hyatt, Zittel-Eastman Textb. Pal., 2d ed., 1913, p. 611.

Apioceras Saemann, Palæontographica, 3, 1852, pp. 138, 157, 162.—Woodward, Man. Mollusca, pt. 3, 1856, p. 449.

Acleistoceras Hyatt, Proc. Boston Soc. Nat. Hist., 22, 1883, p. 277.

Orthoceras, Gomphoceras, Phragmoceras, and Cyrtoceras (part) of authors.

Poterioceras apertum Whiteaves.

Poterioceras apertum Whiteaves, Trans. Royal Soc. Canada, 7, sec. 4, 1890, p. 78, pl. 14, figs. 2-4; ibid., 9, sec. 4, 1892, p. 87, pl. 11, figs. 2, 3.—Clarke, Geol. Minnesota, 3, pt. 2, 1897, p. 796, pl. 57, fig. 11.—Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 3, 1897, p. 217.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 126, fig. 1372.

Oncoceras constrictum Billings, Canadian Nat. Geol., 1, 1856, p. 314, figs. 2, 3; Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 23.

Black River or Richmond: Lake Winnipeg, Manitoba.

Trenton: St. Paul and Cannon Falls, Minnesota.

POTERIOCERAS CONSTRICTUM Foord. See Oncoceras constrictum.

Poterioceras gracile Whiteaves.

Poterioceras gracile Whiteaves, Trans. Royal Soc. Canada, 9, sec. 4, 1892, p. 87, pl. 12, figs. 4, 4a; Pal. Foss., Geol. Surv. Canada, 3, pt. 3, 1897, p. 219.

Black River or Richmond: Lake Winnipeg, Manitoba.

Poterioceras nobile Whiteaves.

Poterioceras nobile Whiteaves, Trans. Royal Soc. Canada, 7, sec. 4, 1890, p. 77, pl. 14, fig. 1; ibid., 9, sec. 4, 1892, p. 87; Pal. Foss., Geol. Surv. Canada, 3, pt. 3, 1897, p. 216.

Black River or Richmond: East Selkirk and Lower Fort Garry, Manitoba.

Poterioceras obesum (Billings).

Gomphoceras obesum Billings, Geol. Surv. Canada, Rep. Progr. for 1853-1856, 1857, p. 311; Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 23 (loc. ref.).

Richmond (English Head, Charleton): Charleton Point and Macasty Bay, Anticosti.

Poterioceras sauridens Clarke and Ruedemann.

Poterioceras sauridens Clarke and Ruedemann, Mem. New York State Mus., 5, 1903, p. 93, pl. 14, figs. 1-19.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 127, fig. 1373.

Poterioceras cf. sauridens Grabau, Michigan Geol. Surv., Geol. Ser., 1, 1909, p. 198, pl. 29, fig. 4.

Niagaran (Guelph): Shelby and Rochester, New York.

Upper Monroan (Amherstburg): Detroit River, opposite Amherstburg, Ontario.

Observation.—See Cyrtoceras reversum Spencer.

Poterioceras tyrrelli Parks.

Poterioceras tyrrelli Parks in Tyrrell, 22d Rep. Ontario Bur. Mines, 1913, p. 33.

Mohawkian or Richmond: Shamattawa River, Manitoba.

Poteriocrinites (Dendrocrinus) of authors. See Dendrocrinus Hall.

Poteriocrinites (Dendrocrinus) polydactylus Meek. See Cupulocrinus polydactylus.

Poteriocrinus of authors. See Dendrocrinus Hall.

Poteriocrinus? calyx Hall. See Ampheristocrinus calyx.

Poteriocrinus pisiformis Roemer. See Lecanocrinus pisiformis.

Poteriocrinus (Dendrocrinus) polydactylus Meek. See Cupulocrinus polydactylus.

PRASOPORA Nicholson and Etheridge, jr.

Genotype: P. grayæ Nicholson and Etheridge, jr.

Prasopora Nicholson and Etheridge, jr., Ann. Mag. Nat. Hist., 4th ser., 20, 1877, p. 38; Mon. Sil. Foss. Girvan Dist., 1878, p. 44.—Nicholson, Pal. Tabulate Corals, 1879, p. 324.—Zittel, Handb. Pal., 1, 1880, p. 616.—Nicholson, Genus Monticulipora, 1881, pp. 102, 202.—Ulrich, Jour. Cincinnati Soc. Nat. Hist., 5, 1882, p. 153.—Foord, Contr. Micro-Pal. Cambro-Sil., 1883, p. 10.—Roemer, Leth. geog., pt. 1, Leth. Pal., 1883, p. 472.—Waagen and Wentzel, Mem. Geol. Surv. India, Pal. Indica, 13th ser., 1886, p. 909.—Foerste, Bull. Sci. Lab. Denison Univ., 2, 1887, p. 170.—Miller, N. A. Geol. Pal., 1889, p. 201.—Ulrich, Geol. Surv. Illinois, 8, 1890, p. 371.—Rominger, Amer. Geol., 6, 1890, pp. 116–119; Geol. Minnesota, 3, 1893, p. 244; (part) Zittel's Textb. Pal. (Engl. ed.), 1896, pp. 104, 273.—Simpson, 14th Ann. Rep. State Geol. New York for 1894, 1897, p. 586.—Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 29.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 129.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 753.—Bassler, Zittel-Eastman Textb. Pal., 1913, p. 332.

Prasopora affinis Foord.

Prasopora affinis Foord, Contr. Micro-Pal. Cambro-Sil., 1883, p. 12, pl. 3, figs. 2–2c.—Ulrich, Geol. Surv. Illinois, 8, 1890, fig. 7c (p. 318).

Trenton: Ottawa, Ontario; Cannon Falls and Berne, Minnesota (Prosser).

Prasopora calycula Ulrich. See Aspidopora calycula.

Prasopora conica Simpson. See Prasopora conoidea.

Prasopora conoidea Ulrich.

Prasopora conoidea Ulrich, 14th Ann. Rep. Geol. Nat. Hist. Surv. Minnesota, 1886, p. 87; Geol. Minnesota, 3, 1893, p. 249, pl. 16, figs. 11–15.—Cumings, Bull. Geol. Soc. Amer., 23, 1912, p. 370, pl. 22, figs. 33–39; pl. 21, figs. 21, 22; pl. 19, figs. 1–6, 9.

Prasopora conica (in error for conoidea) Simpson, 14th Ann. Rep. State Geologist New York for 1894, 1897, fig. 170 (p. 587).

Black River (Decorah): Cannon Falls, St. Paul, etc., Minnesota.

Cotypes.—Cat. No. 43592, U.S.N.M.

Prasopora contigua Ulrich.

Praspora contigua Ulrich, 14th Ann. Rep. Geol. Nat. Hist. Surv. Minnesota, 1886, p. 87; Geol. Minnesota, 3, 1893, p. 249, pl. 16, figs. 24–26.—J. F. James, Jour Cincinnati Soc. Nat. Hist., 16, 1894, p. 180.

Black River (Decorah): Goodhue and Dakota Counties, Minnesota.

Figured sections of *holotype.*—Cat. No. 43590, U.S.N.M.

Prasopora falesi (James).
Monticulipora falesi James, Jour. Cincinnati Soc. Nat. Hist., 7, 1884, p. 138, pl. 7, figs. 2-2d.—James and James, ibid., 10, 1888, p. 168.—J. F. James, ibid., 16, 1894, p. 185.—Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 322.
Prasopora falesi Bassler, Proc. U. S. Nat. Mus., 30, 1906, p. 48, pl. 1, figs. 1–4.
Trenton (Hermitage): Danville, Kentucky.

Prasopora grandis (Ulrich).
Monticulipora grandis Ulrich, 14th Ann. Rep. Geol. Nat. Hist. Surv. Minnesota, 1886, p. 78; Geol. Minnesota, 3, 1893, p. 219, pl. 15, figs. 1–6.
Prasopora grandis Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1903, p. 371.
Black River (Decorah) and Trenton (Prosser): Minneapolis, St. Paul, and Cannon Falls, Minnesota.
Cotypes.—Cat. No. 43591, U.S.N.M.

Prasopora hero Seely. Not recognizable.
Prasopora hero Seely, Rep. Vermont State Geol., 5, 1906, p. 187, pl. 45.
Chazyan: South Hero, Vermont.

PRASOPORA HOSPITALIS Ulrich. See Homotrypella hospitalis.

Prasopora insularis Ulrich.
Prasopora insularis Ulrich, Geol. Minnesota, 3, 1893, p. 251, pl. 16, figs. 18–23.
Trenton (Prosser): Cannon Falls, St. Paul, Berne, and Kenyon, Minnesota; Neenah, Wisconsin; Decorah, Iowa.
Cotypes.—Cat. No. 43588, U.S.N.M.

Prasopora insularis filmorensis Ulrich.
Prasopora insularis var. filmorensis Ulrich, Geol. Minnesota, 3, 1893, p. 252, pl. 16, figs. 18, 19.
Trenton (Prosser): Fountain and Preston, Minnesota.
Figured sections of *holotype*.—Cat. No. 43589, U.S.N.M.

Prasopora lenticularis Ulrich.
Prasopora lenticularis Ulrich, Geol. Minnesota, 3, 1893, p. 253, pl. 17, figs. 22–25.
Black River (Decorah): St. Paul, Minnesota.
Holotype.—Cat. No. 43587, U.S.N.M.

PRASOPORA LYCOPERDON Ulrich. See Prasopora simulatrix.

Prasopora lycoperdon selwyni Ami. Not recognizable.
Prasopora lycoperdon Vanuxem, var. Selwyni Ami, Canadian Rec. Sci., 5, 1892, p. 99.
Trenton: Quebec City, Quebec.

PRASOPORA? NEWBERRYI Ulrich. See Aspidopora newberryi.

Prasopora nodosa Ulrich.
Prasopora nodosa Ulrich, Jour. Cincinnati Soc. Nat. Hist., 5, 1882, p. 245, pl. 11, figs. 1-1b.—J. F. James, ibid., 16, 1894, p. 189.
Trenton (Catheys): Nashville, Tennessee.
Cotypes.—Cat. No. 43691, U.S.N.M.

Prasopora oculata Foord.
Prasopora oculata Foord, Contr. Micro-Pal. Cambro-Sil., 1883, p. 11, pl. 3, figs. 1-1g.—Ulrich, Geol. Minnesota, 3, 1893, p. 252, figs. 15c, d.
Trenton: Ottawa, Ontario; Goodhue County, Minnesota (Prosser).
Plesiotypes.—Cat. No. 43586, U.S.N.M.

PRASOPORA PARMULA Foerste. See Aspidopora parmula.

Prasopora patera Ulrich and Bassler.
Prasopora patera Ulrich and Bassler, Smiths. Misc. Coll. Quart., 47, 1904, p. 20, pl. 6, figs. 11-14.—Hayes and Ulrich, U. S. Geol. Surv., folio 95, illus. sheet, 1903, figs. 44-46.
Trenton (Hermitage): Near Columbia, Nashville, etc., Tennessee.
Cotypes.—Cat. No. 43175, U.S.N.M.

Prasopora selwyni (Nicholson).
Monticulipora (Diplotrypa) Whiteavesii (part). Nicholson, Pal. Tab. Corals, 1879, p. 316.
Monticulipora (Prasopora) Selwynii Nicholson, Genus Monticulipora, 1881, p. 206, fig. 44.
Prasopora selwyni Ulrich, Geol. Minnesota, 3, 1893, p. 250, pl. 16, figs. 16, 17, fig. 15a, b (p. 248); Zittel's Textb. Pal. (Engl. ed.), 1896, fig. 188A (not B=Peronopora decipiens (Rominger) p. 104).
Trenton: Peterboro, etc., Ontario; Cannon Falls, Minnesota (Prosser).
Plesiotypes.—Cat. Nos. 45052, 45053, U.S.N.M.

PRASOPORA SELWYNII var. HOSPITALIS Nicholson. See Homotrypella hospitalis.

Prasopora simulatrix Ulrich.
Prasopora simulatrix Ulrich, 14th Ann. Rep. Geol. Nat. Hist. Surv. Minnesota, 1886, p. 85; Geol. Minnesota, 3, 1893, p. 245, pl. 16, figs. 1-10; Zittel's Textb. Pal. (Engl. ed.), 1896, fig. 452.—Simpson, 14th Ann. Rep. State Geol. New York for 1894, 1897, figs. 171, 172, p. 587.—Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 372.—Sardeson, Jour. Geol., 9, 1901, p. 10, pl. A, figs. 7-9.—Weller, Geol. Surv. New Jersey, Pal., 3, 1903, p. 140, pl. 8, figs. 1-3.—Nickles, Bull. Kentucky Geol. Surv., No. 5, 1905, p. 41, pl. 1, fig. 1.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 129, fig. 186d.—Bassler, Bull. Virginia Geol. Surv., 2a, 1909, p. 7, figs. 1-2.—Bassler, Zittel-Eastman Textb. Pal., 1913, p. 332, fig. 478.
Prasopora lycoperdon Ulrich, Geol. Surv. Illinois, 8, 1890, p. 318, figs. 7a-b.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 130.
Monticulipora selwynii J. F. James (not Nicholson), Jour. Cincinnati Soc. Nat. Hist., 18, 1895, p. 86.
Black River and Trenton: Kentucky, Tennessee, Minnesota, Wisconsin, Virginia; etc.
Cotypes.—Cat. Nos. 43593, 43594, U.S.N.M.

Prasopora simulatrix orientalis Ulrich.
Monticulipora (Diplotrypa) Whiteavesii (in part). Nicholson, Pal. Tab. Corals, 1879, p. 316, fig. 42c, pl. 14, fig. 1.
Prasopora simulatrix var. orientalis Ulrich, Geol. Minnesota, 3, 1893, p. 246, pl. 16, figs. 1, 2, 6, 7.—Ruedemann, Bull. New York State Mus., 49, 1901, p. 13.
Trenton: Ottawa, Peterboro, etc., Ontario; Trenton Falls, New York.
Cotypes.—Cat. Nos. 44054, 44055, U.S.N.M.

PRIMICORALLINA Whitfield. Genotype: P. trentonensis Whitfield.
Primicorallina Whitfield, Bull. Amer. Mus. Nat. Hist., 6, 1894, p. 357.—Miller, N. A. Geol. Pal., 2d App., 1897, p. 721.—Ruedemann, Bull. New York State Mus., 133, 1909, p. 197.

Primicorallina trentonensis Whitfield.
Primicorallina trentonensis Whitfield, Bull. Amer. Mus. Nat. Hist., 6, 1894, p. 357, pl. 11, figs. 14-17; Mem. Amer. Mus. Nat. Hist., 1, pt. 2, 1895, pl. 4, figs.

Primicorallina trentonensis—Continued.

14–17.—Ruedemann, Bull. New York State Mus., 133, 1909, p. 198, figs. 1–3, pl. 1, figs. 1–2.

Trenton: Middleville, New York.

PRIMITIA Jones and Holl. Genotype: Beyrichia mundula Jones.

Primitia Jones and Holl, Ann. Mag. Nat. Hist., 3d ser., 16, 1865, p. 415.—Jones, Monthly Micros. Jour., 4, 1870, p. 191.—Barrande, Syst. Sil. du Centre Boheme, 1, Suppl., 1872, p. 539.—Alth, Abhandl. der K.-K. Geol. Reichsanstalt, 7, Heft. 1, 1874, p. 64.—Callaway, Quart. Jour. Geol. Soc. London, 33, 1877, p. 668.—Zittel, Handb. Pal., 2, 1885, p. 553.—Jones, Ann. Mag. Nat. Hist., 5th ser., 19, 1887, p. 193.—Miller, N. A. Geol. Pal., 1889, p. 561.—Vogdes, Annals New York Acad. Sci., 5, 1889, p. 30, pl. 2, fig. 14.—Krause, Zeits. d. d. geol. Gesell, 41, 1889, p. 4.—Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 650.—Koken, Die Leitfossilien, Leipzig, 1896, p. 39.—Gurich, Verh. d. Russ.-Kais. Mineral Gesell. zu St. Petersburg, 2d ser., 32, 1896, p. 382.—Grabau, Bull. Buffalo Soc. Nat. Sci., 6, 1899, p. 303.—Ulrich, Zittel's Textb. Pal. (Amer. ed.), 1900, p. 644.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 1041.—Bonnema, Mitt. Min. Geol. Inst. Groningen, 2, 1909, p. 15.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 345.—Bassler, Zittel-Eastman Textb. Pal., 2d ed., 1913, p. 738.

Primitia æqualis Jones and Holl.

Primitia æqualis Jones and Holl, Ann. Mag. Nat. Hist., 5th ser., 17, 1886, p. 412, pl. 14, figs. 11a, 11b.—Jones, ibid., 6th ser., 3, 1889, p. 379, pl. 17, fig. 2.

Silurian: Ironbridge, etc., England; Cape Bon Ami, New Brunswick.

PRIMITIA BILLINGSI Jones. See Eurychilina billingsi.

Primitia arctica Holtedahl.

Primitia arctica Holtedahl, 2d Arct. Exp. "Fram," 1898–1902, No. 32, 1914, p. 39, pl. 8, fig. 16.

Helderbergian (Lower beds): Near Borgen, southwestern Ellesmereland, Arctic America.

Primitia celata Ulrich.

Primitia celata Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 653, pl. 43, figs. 67, 68.

Black River (Decorah): Minneapolis, Minnesota.

Holotype.—Cat. No. 41339, U.S.N.M.

Primitia centralis Ulrich.

Primitia centralis Ulrich, Jour. Cincinnati Soc. Nat. Hist., 13, 1890, p. 130, pl. 10, figs. 1, 2a–c.—Jones, Quart. Jour. Geol. Soc. London, 49, 1893, p. 291, pl. 12, figs. 1a–c.

Trenton (Upper), Eden, and Maysville: Cincinnati, Ohio, and vicinity.

Holotype and *paratype.*—Cat. Nos. 41337, 41338, U.S.N.M.

Primitia cincinnatiensis (Miller).

Beyrichia cincinnatiensis Miller, Cincinnati Quart. Jour. Sci., 2, 1875, p. 350, fig. 25.—Walcott, Trans. Albany Inst., 10, 1883, p. 23 (loc. occ.).

Primitia cincinnatiensis Miller, N. A. Geol. Pal., 1889, p. 561, fig. 1045.—Ulrich Jour. Cincinnati Soc. Nat. Hist., 13, 1890, p. 132, pl. 10, figs. 5, 6.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 1047, pl. 53, fig. 11–11d.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 345, fig. 1658l, l′.—Bassler, Zittel-Eastman Textb. Pal., 1913, p. 738, fig. 1425b.

Richmond (Arnheim, Waynesville): Near Fort Ancient, etc., Ohio; Indiana.

Plesiotypes.—Cat. No. 41346, U.S.N.M.

PRIMITIA CONCINNA Jones and Holl. See Aparchites concinnus.

PRIMITIA CONSTRICTA Miller. See Primitiella constricta.

PRIMITIA CRISTATA? Whitfield. See Isochilina cristata.

Primitia cumberlandica Ulrich and Bassler.
Primitia? cumberlandica Ulrich and Bassler, Maryland Geol. Surv., Low. Dev., 1913, p. 516, pl. 95, fig. 5.
Helderbergian (Keyser): Cumberland, Maryland; Keyser, West Virginia.
Holotype.—Cat. No. 53282, U.S.N.M.

Primitia dorsicornis (Ulrich).
Leperditia (?Primitia) dorsicornis Ulrich, Amer. Geol., 10, 1892, p. 267, pl. 9, figs. 24–26.
Leperditella? dorsicornis Ulrich, Geol. Minnesota, 3, pt. 2, 1894, pp. 636–639 figs. 19, 20, 20a.
Richmond (Maquoketa): Savannah, Illinois.
Holotype.—Cat. No. 41315, U.S.N.M.

Primitia duplicata Ulrich.
Primitia duplicata Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 654, pl. 43, figs. 60, 61.
Black River (Decorah): Minneapolis, Minnesota.
Holotype.—Cat. No. 41348, U.S.N.M.

PRIMITIA FILLMORENSIS Miller. See Primitiella fillmorensis.

PRIMITIA FROBISHERI Emerson. See Eurychilina frobisheri.

Primitia gibbera Ulrich.
Primitia gibbera Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 655, pl. 43, figs. 57–59
Richmond (Maquoketa): Near Spring Valley, Minnesota.
Holotype.—Cat. No. 41341, U.S.N.M.

PRIMITIA GLABRA Ulrich. See Lerperditella? glabra.

PRIMITIA GREGARIA Whitfield. See Isochilina gregaria.

Primitia impressa Ulrich.
Primitia impressa Ulrich, Jour. Cincinnati Soc. Nat. Hist., 13, 1890, p. 131, pl. 10, figs. 3a–c, 4a–4c.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 1048, pl. 53, figs. 7, 7d.
Richmond: Savannah, Illinois (Maquoketa); (?)Indiana.
Cotypes.—Cat. No. 41332, U.S.N.M.

Primitia jonesi (Ruedemann).
Primitia mundula (in error for cincinnatiensis) var. jonesi Ruedemann, Bull. New York State Mus., No. 49, 1901, p. 80, pl. 7, figs. 2–5.
Mohawkian (Rysedorph): Rysedorph Hill, Rensselaer County, New York.

PRIMITIA LATIMARGINATA Raymond. See Eurychilina latimarginata.

Primitia lativia Ulrich.
Primitia lativia Ulrich, Geol. Surv. Canada, Cont. Micro-Pal., pt. 2, 1889, p. 50, pl. 9, figs. 8, 8a.—Whiteaves, Geol. Surv. Canada, Pal. Foss., 3, pt. 2, 1895, p. 126 (loc. occ.).
Richmond: Stony Mountain, Manitoba; Wyoming (Stony Mountain); Ohio and Indiana (Whitewater); Island of Anticosti (Charleton).

PRIMITIA LEPERDITIOIDES Jones. See Primitia logani leperditioides.

PRIMITIA LIMBATA Miller. See Primitiella limbata.

Primitia logani (Jones).
Beyrichia Logani Jones, Ann. Mag. Nat. Hist., 3d ser., 1, 1858, p. 244, pl. 9, figs. 6–10; Geol. Surv. Canada, dec. 3, 1858, p. 91, pl. 11, figs. 2–4.
Primitia Logani Jones and Holl, Ann. Mag. Nat. Hist., 3d ser., 16, 1865, p. 417.—Jones, Geol. Surv. Canada, Cont. Micro-Pal., pt. 3, 1891, pp. 63, 97, 99.
Canadian (Beekmantown): Grenville, Quebec, and Hawkesbury, Ontario.

Primitia logani leperditioides (Jones).
Beyrichia Logani var. leperditioides Jones, Ann. Mag. Nat. Hist., 3d ser., 1, 1858, p. 244, pl. 9, fig. 10; Geol. Surv. Canada, dec. 3, 1858, pl. 11, fig. 5.
Primitia leperditioides Jones, Ann. Mag. Nat. Hist., 5th ser., 16, 1884, p. 345.
Primitia Logani var. leperditioides Jones, Geol. Surv. Canada, Cont. Micro-Pal., pt. 3, 1891, pp. 97, 99.
Canadian (Beekmantown): Grenville, Quebec, and Hawkesbury, Ontario.

Primitia logani reniformis (Jones).
Beyrichia logani var. reniformis Jones, Ann. Mag. Nat. Hist., 3d ser., 1, 1858, p. 244, pl. 9, fig. 6; Geol. Surv. Canada, dec. 3, 1858, p. 91, pl. 11, fig. 1.
Primitia Logani var. reniformis Jones, Geol. Surv. Canada, Cont. Micro-Pal., pt. 3, 1891, pp. 97, 99.
Canadian (Beekmantown): Grenville, Quebec, and Hawkesbury, Ontario.

Primitia mammata Ulrich.
Primitia mammata Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 652, pl. 43, figs. 78–81.
Black River (Decorah): Minneapolis, Minnesota.
Holotype.—Cat. No. 41349, U.S.N.M.

Primitia? medialis Ulrich.
Primitia medialis Ulrich, Jour. Cincinnati Soc. Nat. Hist., 13, 1890, p. 132, pl. 10, figs. 7a, 7b.
Richmond (Waynesville?): Jefferson County, Kentucky.
Holotype.—Cat. No. 41347, U.S.N.M.

Primitia micula Ulrich.
Primitia micula Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 653, pl. 43, figs. 69–72.
Trenton (Prosser): Near Cannon Falls, Minnesota.
Cotypes.—Cat. No. 41336, U.S.N.M.

Primitia milleri Ulrich.
Primitia milleri Ulrich, Jour. Cincinnati Soc. Nat. Hist., 13, 1890, p. 133, pl. 12, figs. 2a–2c.
Richmond (Waynesville): Clarksville and Blanchester, Ohio.
Holotype.—Cat. No. 41340, U.S.N.M.

PRIMITIA MINUTA Jones (part). See Bythocypris cylindrica.

Primitia minutissima Ulrich.
Primitia minutissima Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 651, pl. 45, fig. 31.
Black River (Decorah): Fountain and Oxford Mills, Minnesota.
Holotype.—Cat. No. 41838, U.S.N.M.

PRIMITIA MUNDULA var. Jones. See Primitia logani.

Primitia mundula effussa Jones.
Primitia mundula var. effussa Jones, Geol. Surv. Canada, Cont. Micro-Pal., pt. 3, 1891, p. 64, pl. 10, fig. 8.
Black River or Trenton (Quebec City): Quebec, Canada.

Primitia mundula incisa Jones.
Primitia mundula incisa Jones, Geol. Surv. Canada, Cont. Micro-Pal., pt. 3, 1891, p. 64, pl. 10, figs. 9a–c.
Trenton: Lorette Falls, Quebec.

PRIMITIA MUNDULA var. JONESI Ruedemann. See Primitia jonesi.

Primitia muta Jones and Holl.
Cytheropsis concinna? Jones, Ann. Mag. Nat. Hist., 3d ser., 1, 1858, p. 254, pl. 9, fig. 3.
Primitia muta Jones and Holl, ibid, 3d ser., 16, 1865, p. 425.—Emerson (?) Narrative Hall's 2d Arctic Exped., U. S. Navy Dep., 1879, p. 580, fig. 7.
Niagaran: Beechy Island, Lancaster Sound, Arctic America.

Primitia nitida Ulrich.
Primitia nitida Ulrich, Jour. Cincinnati Soc. Nat. Hist., 13, 1890, p. 135, pl. 8, fig. 7.
Trenton (Perryville): Paris, Kentucky.
Holotype.—Cat. No. 41334, U.S.N.M.

PRIMITIA NODOSA Ulrich. See Ulrichia nodosa.

PRIMITIA (BEYRICHIA) PARALLELA Ulrich. See Beyrichia parallela.

Primitia perminima Ulrich.
Primitia perminima Ulrich, Jour. Cincinnati Soc. Nat. Hist., 13, 1890, p. 131, pl. 7, fig. 7.
Trenton (Upper): Covington, Kentucky.
Holotype.—Cat. No. 41436, U.S.N.M.

Primitia rudis Ulrich.
Primitia rudis Ulrich, Jour. Cincinnati Soc. Nat. Hist., 13, 1890, p. 136, pl. 10, figs. 8a–8c.
Eden (Economy): Covington, Kentucky.
Holotype.—Cat. No. 41345, U.S.N.M.

PRIMITIA RUGOSA Jones and Holl. See Cytherella? rugosa.

Primitia rugulifera (Jones).
Beyrichia rugulifera Jones, Ann. Mag. Nat. Hist., 3d ser., 1, 1858, p. 242, pl. 9, fig. 4.
Primitia rugulifera Jones and Holl, ibid., 3d ser, 16, 1865, p. 419.
Niagaran: Beechy Island, Lancaster Sound, Arctic America.

Primitia sanctipauli Ulrich.
Primitia sancti-pauli Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 652, pl. 43, figs. 73, 74.
Black River (Decorah): St. Paul and near Cannon Falls, Minnesota.
Holotype.—Cat. No. 41343, U.S.N.M.

PRIMITIA? SCULPTILIS Ulrich. See Halliella sculptilis.

PRIMITIA SEELYI Whitfield. See Isochilina seelyi.

Primitia sigillata (Jones).
Beyrichia sigillata Jones, Ann. Mag. Nat. Hist., 3d ser., 1, 1858, p. 242, pl. 9, fig. 5.
Primitia sigillata Jones and Holl, ibid., 3d ser., 16, 1865, p. 418.
Niagaran: Beechy Island, Lancaster Sound, Arctic America.

PRIMITIA SIMULANS Miller. See Primitiella simulans.

Primitia tumidula Ulrich.
Primitia tumidula Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 655, pl. 43, figs. 62–65.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 345, fig. 1658m, m′, n.
Richmond (Maquoketa): Near Spring Valley, Minnesota.
Cotypes.—Cat. No. 41342, U.S.N.M.

PRIMITIA ULRICHI Jones. See Primitiella ulrichi.

PRIMITIA UNICORNIS Jones. See Primitiella unicornis.

Primitia uphami Ulrich.
Primitia uphami Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 651, pl. 43, fig. 66.
Trenton (Prosser): Cannon Falls, Minnesota.
Holotype.—Cat. No. 41344, U.S.N.M.

PRIMITIA WHITFIELDI Jones. See Primitiella whitfieldi.

PRIMITIELLA Ulrich. Genotype: P. constricta Ulrich.
Primitiella Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 647.—Bonnema, Mitt. Min. Geol. Inst. Groningen, 2, 1909, p. 33.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 344.—Bassler, Zittel-Eastman Textb. Pal., 2d ed., 1913, p. 737.

Primitiella claypolei (Jones).
Leperditia Claypolei Jones, Quart. Jour. Geol. Soc. London, 46, 1890, p. 25, pl. 3, figs. 17a, c.
Eden (Fulton): Cincinnati, Ohio, and vicinity.

Primitiella constricta Ulrich.
Primitiella constricta Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 647, pl. 43, figs. 48–52.
Primitia constricta Miller, N. A. Geol. Pal., 2d. App., 1897, p. 789 (gen. ref.).
Black River: High Bridge, Kentucky (Lowville); Minneapolis, Minnesota (Platteville).
Cotypes.—Cat. Nos. 41462, 41463, U.S.N.M.

Primitiella fillmorensis Ulrich.
Primitiella fillmorensis Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 649, pl.45, figs. 28–30.
Primitia fillmorensis Miller, N. A. Geol. Pal., 2d App., 1897, p. 789 (gen. ref.).
Black River (Decorah): Fountain, Minnesota.
Holotype.—Cat. No. 41476, U.S.N.M.

Primitiella limbata Ulrich.
Primitiella limbata Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 648, pl. 43, figs. 53–56.
Primitia limbata Miller, N. A. Geol. Pal., 2d App., 1897, p. 789 (gen. ref.).
Black River (Decorah): Minneapolis, Minnesota.
Cotypes.—Cat. No. 41350, U.S.N.M.

Primitiella simulans Ulrich.
Primitiella simulans Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 648, pl. 43, figs. 26–28.
Primitia simulans Miller, N. A. Geol. Pal., 2d App., 1897, p. 789 (gen. ref.).
Black River (Decorah): Fountain, Minnesota.
Cotypes.—Cat. No. 41475, U.S.N.M.

Primitiella ulrichi (Jones).
Primitia ulrichi Jones, Quart. Jour. Geol. Soc. London, 46, 1890, p. 6, pl. 4, figs. 1a–c; figs. 2, 3 var.
Primitiella ulrichi Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 647.
Trenton (Collingwood): Collingwood, Ontario.

Primitiella unicornis (Ulrich).
Leperditia unicornis Ulrich, Jour. Cincinnati Soc. Nat. Hist., 2, 1879, p. 10, pl. 7, figs. 4, 4b.
Aparchites unicornis Ulrich, Geol. Surv. Canada, Cont. Micro-Pal., pt. 2, 1889, p. 50, pl. 9, fig. 11.
Primitia unicornis Jones, Quart. Jour. Geol. Soc. London, 46, 1890, p. 7, pl. 4, figs. 8–13.—Chapman, Proc. Royal Soc. Victoria, n. s., 17, 1904, p. 306.
Primitiella unicornis Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 647–649, pl. 43, figs. 75–77.—Whiteaves, Geol. Surv. Canada, Pal. Foss., 3, pt. 2, 1895, p. 126 (loc. occ.).—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 344, fig. 1658j, k, k′.—Ruedemann, Bull. New York State Mus., 162, 1912, p. 121, pl. 9, figs. 13, 14.—Bassler, Zittel-Eastman Textb. Pal., 1913, p. 738, fig. 1425a.
Eden (Fulton): Cincinnati, Ohio, and vicinity (identified probably erroneously from Stony Mountain, Manitoba, and from Victoria); Minnesota, New York, and Australia.
Holotype.—Cat. No. 41467, U.S.N.M.

Primitiella whitfieldi (Jones).
Primitia whitfieldi Jones, Quart. Jour. Geol. Soc. London, 46, 1890, p. 9, pl. 3, figs. 24a, 24b.
Primitiella whitfieldi Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 647.
Eden (Fulton): Cincinnati, Ohio, and vicinity.

PRIONIODUS Pander. Genotype: P. elegans Pander.
Prioniodus Pander, Mon. d. foss. Fische Sil. Syst., 1856, p. 28.—Miller, N. A. Geol. Pal., 1889, p. 520.—Grabau, Bull. Buffalo Soc. Nat. Sci., 6, 1889, p. 150.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 244.

Prioniodus dychei James.
Prioniodus dychei James, Jour. Cincinnati Soc. Nat. Hist., 7, 1884, p. 147, pl. 7, figs. A, B.
Maysville (Corryville): Warren County, Ohio.

Prioniodus elegans Pander.
Prioniodus elegans Pander, Mon. foss. Fische Sil. Syst., 1856, p. 29, pl. 2, figs. 22, 23.—Hinde, Quart. Jour. Geol. Soc. London, 35, 1879, p. 358, pl. 15, fig. 10.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 244, fig. 1538d.
Cincinnatian (Pulaski): Garrison Common, near Toronto, Ontario.

Prioniodus furcatus Hinde.
Prioniodus furcatus Hinde, Quart. Jour. Geol. Soc. London, 35, 1879, p. 358, pl. 15, fig. 13.
Cincinnatian (Pulaski): Garrison Common, near Toronto, Ontario.

Prioniodus? politus Hinde.
Prioniodus? politus Hinde, Quart. Jour. Geol. Soc. London, 35, 1879, p. 358, pl. 15, figs. 11, 12.
Cincinnatian (Pulaski): Garrison Common and Don Valley, near Toronto, Ontario.

iodus radicans Hinde.
rioniodus radicans Hinde, Quart. Jour. Geol. Soc. London, 35, 1879, p. 356, pl. 15, figs. 1–6.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 244, fig. 1538a–c.
hazyan: Grenville, Quebec.

OTUS CONVOLTUS Hisinger. See Monograptus convolutus.

COCHITON Dall. Genotype: Chiton canadensis Billings.
riscochiton (Billings MS.) Dall, Proc. U. S. Nat. Mus., 4, 1881, p. 281.

ochiton canadensis (Billings).
hiton Canadensis Billings, Geol. Surv. Canada, Pal. Fossils, 1, p. 394, fig. 370a–c.
etoptoma canadensis Miller, N. A. Geol. Pal., p. 410, fig. 685.
riscochiton canadensis Dall, Proc. U. S. Nat. Mus., 4, 1881, p. 281.
lack River (Leray): Pauquette Rapids, Ottawa River, Canada.

MATOPHYLLUM Simpson.
Genotype: Cyathophyllum rugosum Edwards and Haime.
rismatophyllum Simpson, Bull. New York State Mus., 398, 1900, p. 218.

atophyllum inæquale (Hall).
olumnaria inæqualis Hall, Pal. New York, 2, 1852, p. 323, pl. 72, figs. 3a, b, 4a–c.
cervularia? inequalis Hall and Whitfield, 23d Rep. New York State Mus. Nat. Hist., 1873, p. 233.—Schuchert, Amer. Geol., 31, 1903, p. 163.
rismatophyllum inequalis Weller, Geol. Surv. New Jersey, Pal., 3, 1903, p. 219, pl. 17, figs. 12–13.
yathophyllum inequale Swartz, Maryland Geol. Surv., Low. Dev., 1913, p. 205, pl. 20, figs. 1–4.
cervularia communis Simpson, Trans. Amer. Phil. Soc., n. s., 16, 1889, p. 459, figs.
ayugan (Cobleskill): Schoharie, etc., New York.
elderbergian: New Jersey (Decker Ferry); Pennsylvania and Maryland (Keyser).

BOSCINA Audouin. Genotype: P. boryi Audouin.
roboscina Audouin, Savigny's Descr. del Egypte, Pol., 1826, p. 236.—D'Orbigny, Pal. Francais, Terr. Cret., 5, 1854, p. 844.—Haime, Bry. Foss. Form. Juras., 1854, p. 166 (extra edition, p. 10).—Zittel, Handb. Pal., 1, 1880, p. 598.—Ulrich, Jour. Cincinnati Soc. Nat. Hist., 5, 1882, p. 149; Geol. Surv. Illinois, 8, 1890, p. 368; Geol. Minnesota, 3, 1893, p. 119.—Simpson, 14th Ann. Rep. State Geol. New York for 1894, 1897, p. 596.—Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 20.—Cumings, Amer. Jour. Sci., 4th ser., 17, 1904, p. 75, fig. 82.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 118.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 753.—Bassler, Zittel-Eastman Textb. Pal., 1913, p. 319.

oscina auloporoides (Nicholson).
lecto auloporoides Nicholson, Pal. Ohio, 2, 1875, p. 267, pl. 25, figs. 2–2b.
tomatopora auloporoides Miller, N. A. Geol. Pal., 1889, p. 325.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1102, figs.
Proboscina auloporoides Ulrich, Contr. Micro-Pal. Cambro-Sil., pt. 2, 1889, p. 28.—Whiteaves, Pal. Foss., 3, 1895, p. 115.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 872, pl. 32, figs. 4, 4a, 5.
Maysville and Richmond: Cincinnati, Ohio, and vicinity; Stony Mountain, Manitoba.

Proboscina confusa (Nicholson).
Alecto confusa Nicholson, Pal. Ohio, 2, 1875, p. 267, pl. 25, fig. 6.
Stomatopora confusa Miller, N. A. Geol. Pal., 1889, p. 325.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1104, fig.
Proboscina confusa Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 375.
Eden (Economy—McMicken): Cincinnati, Ohio, and vicinity.

Proboscina frondosa (Nicholson).
Aulopora frondosa James, Additions to Catal. Sil. Foss. Cincinnati Group, 1873, p. 15. (Not defined.)
Alecto frondosa Nicholson, Pal. Ohio, 2, 1875, p. 266, pl. 25, figs. 3–3b.
Proboscina frondosa Ulrich, Contr. Micro-Pal. Cambro-Sil., pt. 2, 1889, p. 28; Geol. Minnesota, 3, 1893, p. 119, pl. 1, fig. 28.—Whiteaves, Pal. Foss., 3, 1895, p. 115.—Simpson, 14th Ann. Rep. State Geol. New York for 1894, 1897, fig. 201 (part) (p. 596).—Bassler, Proc. U. S. Nat. Mus., 30, 1906, p. 50.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 118, fig. 178c.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 873, pl. 32, figs. 3, 3b.—Bassler, Zittel-Eastman Textb. Pal., 1913, p. 319, fig. 439c.
Stomatopora frondosa Miller, N. A. Geol. Pal., 1889, p. 325.
Stomatopora (Proboscina) frondosa Ulrich, Zittel's Textb. Pal. (Engl. ed.), fig. 412c, p. 261.
Stromatopora (Alecto) frondosa Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1105, figs.
Maysville and Richmond: Cincinnati, Ohio, and vicinity; Indiana; Kentucky; Tennessee; Manitoba; etc.
Plesiotype.—Cat. No. 43264, U.S.N.M. (Ulrich).

PROBOSCINA MINNESOTENSIS Sardeson. See Berenicea minnesotensis.

Proboscina tumulosa Ulrich.
Proboscina tumulosa Ulrich, Geol. Minnesota, 3, 1893, p. 119, pl. 1, fig. 24.—Simpson, 14th Ann. Rep. State Geol. New York for 1894, 1897, fig. 201 (in part) (p. 596).—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 119, fig. 178d.
Black River (Decorah): St. Paul and Cannon Falls, Minnesota.
Holotype.—Cat. No. 43265, U.S.N.M.

PROCLIVOCRINUS Ringueberg. See Eucheirocrinus Meek and Worthen.

PRODUCTA INCURVATA Shepard. See Strophomena incurvata.

PRODUCTELLA MINNEAPOLIS Sardeson. See Trematis huronensis.

PRODUCTUS? SULCATUS Castelnau. See Leptæna rhomboidalis.

PRODUCTUS SULCIFER Verneuil. See Leptæna rhomboidalis.

PROETUS Steininger. Genotype: P. cuvieri Steininger.
Proetus Steininger, Mem. Soc. Geol. France, 1, 1831, p. 355.—Portlock, Rep. Geol. Londonderry, 1843, p. 304.—Loven, Ofvers. K. Vet.-Akad. Forhandl., 2, 1845, p. 48.—Burmeister, Org. Tril., London, 1846, p. 99.—Beyrich, Untersuchung uber Tril., 1846, p. 27.—Hawle and Corda, Abh. d. k. bohmischen Gesell. d. Wiss., 5 (extract), 1847, p. 72, pl. 5, fig. 43.—Rouault, Bull. Soc. Geol. France, 2d ser., 1847, p. 318.—Salter, Mem. Geol. Surv. Great Britain, 2, pt. 1, 1848, p. 337.—McCoy, Ann. Mag. Nat. Hist., 2d ser., 4, 1849, p. 400.—Barrande, Neues Jahrb. Min., etc., 1850, p. 780; Syst. Sil. du Centre Boheme, 1, 1852, p. 429.—Angelin, Pal. Scandinavica, 3d ed., Holmiae, 1852, p. 20.—Hall, Pal. New York, 2, 1852, p. 315.—Pictet, Traité de Pal., 2d ed., 2, 1854,

PROETUS—Continued.

p. 494.—Nieszkowski, Archiv fur Naturk. Liv-, Ehst- und Kurl., 1, 1857, p. 555.—Hall, 15th Rep. New York State Cab. Nat. Hist., 1861, p. 97.—Salter, Cat. Camb. and Sil. Foss., 1873, p. 133.—Alth, Abhandl. der K.-K. Geol. Reichsanstalt, 7, Heft 1, 1874, p. 59.—Miller, Cincinnati Quart. Jour. Sci., 1, 1874, p. 144.—Nicholson and Etheridge, Mon. Sil. Foss. Girvan Dist., 1880, p. 169.—Woodward, Geol. Mag., dec. 2, 10, 1883, p. 445; Mon. Beit. Carb. Tril., Pal. Soc., 1884, p. 55.—Œhlert, Bull. Soc. d'Etudes Sci. d'Angers, 1885, pp. 4, 8.—Zittel, Handb. Pal., 2, 1885, p. 625.—Œhlert, Bull. Soc. d'Etudes Sci. d'Angers, 15, for 1885, 1886, p. 128.—Herrick, Bull. Sci. Lab. Denison Univ., 2, pt. 1, 1887, p. 53; ibid., 4, 1888, pp. 50, 51, 55.—Clarke, Jour. Morph. 2, 1888, p. 254.—Vogdes, Ann. New York Acad. Sci., 4, 1888, pp. 70, 74, pl. 2, figs. 1, 2; Cal. Acad. Sci. Occ. Papers, 4, 1893, p. 338 (see for generic synonymy).—Hall and Clarke, Pal. New York, 7, 1888, p. xli, fig. p. 43.—Whidborne, Mon. Dev. Fauna South England, 1, Pal. Soc., 1889, p. 20.—Miller, N. A. Geol. Pal., 1889, p. 561.—Schmidt, Mem. l'Acad. Imp. Sci. St. Petersburg, 7th ser., 42, 1894, p. 38.—Beecher, Amer. Geol., 16, 1895, p. 180.—Œhlert, Bull. Soc. Geol. France, 3d ser., 24, 1896, p. 111, figs. 27, 28.—Koken, Die Leitfossilien, Leipzig, 1896, p. 24, fig. 15, figs. 2-4; p. 422.—Beecher, Amer. Jour. Sci., 4th ser., 3, 1897, p. 104, pl. 3, fig. 20.—Reed, Geol. Mag., dec. 4, 5, 1898, p. 453.—Grabau, Bull. Buffalo Soc. Nat. Sci., 6, 1899, p. 315.—Beecher, Zittel-Eastman Textb. Pal., 1, 1900, p. 631.—Lindstrom, Kongl. Sven. Vet.-Akad. Handl., 34, No. 8, 1901, p. 26.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 1052.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 299.—Raymond, Zittel-Eastman Textb. Pal., 1913, p. 721.

Proetus alaricus Billings.

Proetus alaricus Billings, Canadian Nat. Geol., 5, 1860, p. 68, fig. 12; Geol. Canada, Geol. Surv. Canada, 1863, p. 219, fig. 231; Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 28 (loc. ref.).—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 767, fig.—Miller, N. A. Geol. Pal., 1889, p. 562, fig. 1046.

Richmond (Charleton): Charleton Point, Anticosti.

Proetus brevimarginatus Weller.

Proetus brevimarginatus Weller, Geol. Surv. New Jersey, Pal., 3, 1903, p. 197, pl. 15, figs. 1-7.

Trenton: Jacksonburg, New Jersey.

Proetus channahonensis Weller.

Proetus channahonensis Weller, Bull. Chicago Acad. Sci., Nat. Hist. Surv., 4, pt. 2, 1907, p. 228, pl. 20, figs. 6, 7.—Savage, Bull. Geol. Surv. Illinois, 23, 1913, p. 120, pl. 7, fig. 25.

Upper Medinan (Channahon): Near Channahon, Will County, Illinois.

Proetus clelandi Raymond.

Proetus clelandi Raymond, Ann. Carnegie Mus., 3, 1905, p. 354, pl. 13, figs. 13 14; 7th Rep. Vermont State Geol., 1910, p. 231, pl. 35, figs. 13, 14.

Chazyan (Crown Point?): Chazy, New York.

Proetus corrugatus Van Ingen.

Proetus corrugatus Van Ingen, School of Mines Quart., 23, 1901, p. 54, figs. 16-17, pl. figs. 12-15.

Niagaran (St. Clair): St. Clair Spring, Independence County, Arkansas.

Proetus corycœus (Conrad).

Asaphus corycœus Conrad, Jour. Acad. Nat. Sci. Philadelphia, 1st ser., 8, pt. 2, 1842, p. 277, pl. 16, fig. 15.—Hall, Geol. New York, pt. 4, 1843, tab. org. rem., 19, fig. 3.

Proetus corycœus Hall, Pal. New York, 2, 1852, p. 315, pl. 67, fig. 15.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 767, text figs.

Clinton (Rochester): Lockport, New York.

Proetus crassimarginatus (Hall).

Calymene crassimarginatus Hall, Geol. New York, Geol. 4th Dist., 1843, p. 17, fig. 5.

Proetus crassimarginatus Hall, 15th Rep. New York State Cab. Nat. Hist., 18 (adv. sheets 1861, p. 72), p. 100, pl. 10, fig. 10.—Nicholson, Rep. Pal. Prov. Ontario, pt. 1, 1874, pp. 123, 124, fig. 56b.—Hall, Illust. Dev. Fossils, Geol. Surv. New York, Pal., Crust., 1877, pl. 20, figs. 20–31.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 768, figs.—Hall and Clarke, Pal. New York, 7, 1888, p. 99, pls. 20, 22, 25.—Whiteaves, Cont. Can. Pal., Geol. Surv. Canada, 1, pt. 5, 1898, p. 410.—Kindle, 25th Ann. Rep. Indiana Dep. Geol. Nat. Res., 1901, p. 750, pl. 30, figs. 1, 1a, 2, 5, 6.—Grabau, Michigan Geol. Surv., Geol., 1st ser., 1909, p. 207, pl. 20, figs. 16–18.

Devonian (Onondaga): New York, etc.

Upper Monroan (Amherstburg): Detroit River, opposite Amherstburg, Ontario.

Proetus depressus Weller.

Proetus? depressus Weller, Geol. Surv. New Jersey, Pal., 3, 1903, p. 249, pl. 2, fig. 27.

Helderbergian (Decker Ferry): Two miles south of Tristates, New York.

Proetus determinatus Foerste.

Bathyurus ——— Foerste, Bull. Sci. Lab. Denison Univ., 1, 1885, p. 103, pl. 1, fig. 5.

Proetus determinatus Foerste, ibid., 2, pt. 1, 1887, p. 91, pl. 8, figs. 2, 3, 3a; Geol. Surv. Ohio, 7, 1895, p. 523, pl. 26, fig. 5; pl. 27, figs. 2, 3, 3a.—Savage, Bull. Geol. Surv. Illinois, 23, 1913, p. 104, pl. 6, figs. 10, 11.

Upper Medinan: Dayton, Ohio (Brassfield); near Thebes, Illinois, Edgewood and Louisiana, Missouri (Edgewood).

Proetus? handwerki Weller.

Proetus? handwerki Weller, Bull. Chicago Acad. Sci., Nat. Hist. Surv., 4, pt. 2, 1907, p. 229, pl. 20, figs. 8, 9.

Niagaran (Racine): Near Lemont, Illinois.

Proetus latimarginatus Weller.

Proetus latimarginatus Weller, Geol. Surv. New Jersey, Pal., 3, 1903, p. 195, pl. 14, figs. 17–24, (?25).

Trenton: Jacksonburg, New Jersey.

Proetus leptorhachis Holtedahl.

Proetus leptorhachis Holtedahl, Second Arctic Exp. "Fram", 1898–1902, No. 32, 1914, p. 33, pl. 8, fig. 14.

Helderbergian (Lower beds): Southwestern Ellesmereland, Arctic America.

Proetus pachydermatus Barrett.

Proetus pachydermatus Barrett, Amer. Jour. Sci., 3d ser., 15, 1878, p. 371.—Weller, Pal. New Jersey, 3, 1903, p. 248, pl. 22, figs. 16–21.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 299.—Maynard, Maryland Geol. Surv., Low. Dev., 1913, p. 489, pl. 89, fig. 1.

[illegible]derbergian: Nearpass Quarry, New Jersey (two miles south of Tristates, New York) (Decker Ferry); Cumberland, Maryland (Keyser).

Proetus parviusculus Hall.

Proetus parviusculus Hall, 13th Rep. New York State Cab. Nat. Hist., 1860, p. 120; 24th Rep. New York State Cab. Nat. Hist., 1872, p. 223, pl. 8, fig. 14.—Miller, Cincinnati Quart. Jour. Sci., 1, 1874, p. 144.—Hall and Whitfield, Geol. Surv. Ohio Pal., 2, 1875, p. 109, pl. 4, fig. 18.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 770, fig.—Clarke, Geol. Minnesota, 3, pt. 2, 1894, p. 754.—Beecher, Amer. Geol., 16, 1895, p. 173, pl. 9, figs. 5–7.

Maysville (Corryville): Cincinnati, Ohio.

Proetus princeps Savage.

Proetus princeps Savage, Bull. Geol. Surv., Illinois, 23, 1913, p. 57, pl. 2, fig. 14.

Upper Medinan (Girardeau): Near Thebes, Illinois.

Proetus spinosus Weller.

Proetus spinosa Weller, Geol. Surv. New Jersey Pal., 3, 1903, p. 250, pl. 22, fig. 26.

Helderbergian (Decker Ferry): Nearpass Quarry, New Jersey (two miles south of Tristates, New York).

Proetus spurlocki Meek.

Proetus Spurlocki Meek, Amer. Jour. Sci., 3d ser., 3, 1872, p. 426; Geol. Surv. Ohio, Pal., 1, 1873, p. 161, pl. 14, fig. 12.—Miller, Cincinnati Quart. Jour. Sci., 1, p. 145.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 772, fig.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 1062, pl. 54, fig. 13.

Proetus spurlocki (Isotelus maximus?) Raymond, Bull. Mus. Comp. Zool. Harvard, 58, 1914, pl. 1, fig. 3.

Eden (Southgate): Cincinnati, Ohio.

Observation.—Probably the young of Isotelus maximus.

Proetus stokesi (Murchison?) Hall.

Asaphus stokesii Murchison, Sil. Syst., 1839, p. 625, pl. 14, fig. 6.

Proetus stokesii Hall, Pal. New York, 2, 1852, p. 316, pl. 67, figs. 13–14.

Phacops stokesii Dawson, Canadian Nat. Geol., 5, 1860, p. 298.

Silurian: England; Lockport, New York (Rochester).

Proetus stonemanii (Vogdes).

Asaphus extans Winchell, 6th Ann. Rep. Geol. Nat. Hist. Surv. Minnesota, 1878, p. 161.

Bathyurus Stonemanii Vogdes, 12th Ann. Rep. Geol. Nat. Hist. Surv. Minnesota, 1884, p. 9.

Proetus stonemani Miller, N. A. Geol. Pal., 2d App., 1897, p. 789 (gen. ref.).—Clarke, Geol. Minnesota, 3, pt. 2, 1894, p. 724.

Devonian (drift): Minneapolis, Minnesota (erroneously cited as Trenton).

Proetus subannulatus Van Ingen.

Proetus subannulatus Van Ingen, School of Mines Quart., 23, 1901, p. 57, fig. 18, p. 54, pl. figs. 16, 17.

Niagaran (St. Clair): St. Clair Spring, Independence County, Arkansas.

Proetus undulostriatus (Hall).

Olenus undulostriatus Hall, Pal. New York, 1, 1847, p. 258, pl. 67, figs. 3a, b.

Elliptocephala undulostriata Miller, N. A. Geol. Pal., 1889, p. 546.

Bathyurus sp. Whitfield and Hovey, Bull. Amer. Mus. Nat. Hist., pt. 1, 11, 1898, pp. 70, 71.

Cyphaspis hudsonica Ruedemann, Bull. New York State Mus., 49, 1901, p. 64, pl. 4, figs. 8, 9.

Proetus undulostriatus—Continued.
Proetus undulostriata Ruedemann, Bull. New York State Mus., 42, 1901, p. 536; ibid., 162, 1912, p. 117, pl. 9, figs. 2, 3.
Trenton (Snake Hill): Snake Hill, Saratoga County, and Green Island, near Albany, New York.

PROLOBELLA Ulrich. Genotype: P. striatula Ulrich.
Prolobella, Ulrich Geol. Minnesota, 3, pt. 2, 1894, p. 532.

Prolobella aviculoides (Hall).
Modiolopsis aviculoides Hall, Pal. New York, 1, 1847, pp. 161, 317, pl. 36, figs. 1a, b.—Ruedemann, Bull. New York State Mus., 49, 1901, p. 28.
Trenton: Middleville, New York.

Prolobella? hermione (Billings).
Avicula Hermione Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 40, fig. 42, (adv. sheets, 1862); Geol. Canada, Geol. Surv. Canada, 1863, p. 170, fig. 156.
Trenton: Montreal, Quebec.
Plastotype.—Cat. No. 46094, U.S.N.M.

Prolobella striatula Ulrich.
Prolobella striatula Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 532, pl. 35, fig. 27.
Pterinea striatula Miller, N. A. Geol. Pal., 2d App., 1897, p. 784 (gen. ref.).
Trenton (Prosser): Pleasant Grove, Minnesota.
Holotype.—Cat. No. 46280, U.S.N.M.

Prolobella subelliptica (D'Orbigny).
Avicula elliptica Hall (not Phillips, 1836), Pal. New York, 1, 1847, p. 162, pl. 36, fig. 3.—Billings, Geol. Canada, Geol. Surv. Canada, 1863, p. 170, fig. 155.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 68, fig.
Pterinea elliptica Miller, N. A. Geol. Pal., 1889, p. 506 (gen. ref.).
Avicula subelliptica D'Orbigny, Prodr. Pal., 1, 1850, p. 13.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 175, pl. 13, fig. 27.
Trenton: Middleville, New York.

Prolobella subspatulata (Hall).
Modiolopsis subspatulatus Hall, Pal. New York, 1, 1847, p. 159, pl. 35, figs. 9a, b,
Lyonsia subspatulatus Emmons, Amer. Geology, 1, pt. 2, 1855, p. 171.
Palæarca subspatulata Hall, 12th Rep. New York State Cab. Nat. Hist., 1859, p. 71 (gen. ref.).
Cypricardites subspatulata Miller, N. A. Geol. Pal., 1889, p. 477.
Trenton: Watertown, New York.

Prolobella trentonensis (Conrad).
Avicula Trentonensis Conrad, Jour. Acad. Nat. Sci. Philadelphia, 8, 1842, p. 240, pl. 12, fig. 10.—Hall, Pal. New York, 1, 1847, p. 161. pl. 36, figs. 2a-d.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 176, pl. 13, figs. 28–30.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 70, fig.
Pterinea trentonensis Miller, N. A. Geol. Pal., 1889, p. 506 (gen. ref.).
Prolobella trentonensis Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 532 (gen. ref.).—Ruedemann, Bull. New York State Mus., 162, 1912, p. 97, pl. 5, fig. 4.
Avicula aviformis Conrad, Jour. Acad. Nat. Sci. Philadelphia, 8, 1842, p. 243, pl. 13, fig. 11.
Trenton: Middleville, Watertown, Canajoharie, etc., New York.

PROLUCINA Dall. Genotype: Tellina prisca Hisinger.
Prolucina Dall (subgenus of Lucina), Zittel-Eastman Textb. Pal., 1900, p. 408.

Prolucina galtensis (Whiteaves).

Ilionia galtensis Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 1, 1884, p. 15, pl. 3, figs. 1a–b.—Miller, N. A. Geol. Pal., 1889, p. 483, fig. 833.—Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 2, 1895, p. 68, pl. 15, fig. 3.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 379, fig. 483.

Prolucina Galtensis Whiteaves, Geol. Surv. Canada, Pal. Foss., 3, pt. 4, 1906, p. 330 (gen. ref.).

Niagaran (Guelph): Galt and Durham, Ontario.

Cayugan (Cobleskill): Cobleskill, New York.

PROMOPALÆASTER Schuchert. Genotype: Palæaster granulosus Meek.

Palæaster (part) of authors.

Promopalæaster Schuchert, in Frech, Foss. Cat., 1, Anim., pt. 3, 1914, p. 33; Bull. U. S. Nat. Mus., 88, 1915, p. 102.

Promopalæaster bellulus Schuchert.

Promopalæaster bellulus Schuchert, in Frech, Foss. Cat., 1, Anim., pt. 3, 1914, p. 33; Bull. U. S. Nat. Mus., 88, 1915, p. 113, pl. 15, figs. 6–8; pl. 16, fig. 1; pl. 18, figs. 4, 5.

Richmond (Waynesville): Near Waynesville, Ohio.

Promopalæaster dyeri (Meek).

Palæaster? Dyeri Meek, Amer. Jour. Sci., 3d ser., 3, 1872, p. 257; Geol. Surv. Ohio, Pal., 1, 1873, p. 58, pl. 4, figs. 2a–f.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 576, figs.—James, Jour. Cincinnati Soc. Nat. Hist., 18, 1895, p. 128.

Promopalæaster dyeri Schuchert, in Frech, Foss. Cat., 1, Anim., pt. 3, 1914, p. 33; Bull. U. S. Nat. Mus., 88, 1915, p. 120, pl. 18, fig. 8; pl. 20, figs. 3–6; pl. 25, fig. 1.—Williams, Ohio Naturalist, 14, 1914, pp. 221–224, figs. 1, 2.

Maysville (Fairmount): Cincinnati, Ohio.

Promopalæaster exculptus (Miller).

Palæaster exculptus Miller, Jour. Cincinnati Soc. Nat. Hist., 4, 1881, p. 69, pl. 1, fig. 1.—James, ibid., 18, 1895, p. 129.

Promopalæaster exculptus Schuchert, in Frech, Foss. Cat., 1, Anim., pt. 3, 1914, p. 33; Bull. U. S. Nat. Mus., 88, 1915, p. 117, pl. 18, fig. 7; pl. 20, fig. 2.

Richmond (Waynesville or Liberty): Waynesville, Ohio.

Observation.—Compare with Promopalæaster spinulosus.

Promopalæaster granulosus (Hall).

Palæaster granulosa Hall, 20th Rep. New York State Cab. Hist., 1868, p. 285; rev. ed., 1870, p. 327.—James, Jour. Cincinnati Soc. Nat. Hist., 18, 1895, p. 128.

Promopalæaster granulosus Schuchert, in Frech, Foss. Cat., 1, Anim., pt. 3, 1914, p. 33; Bull. U. S. Nat. Mus., 88, 1915, p. 112.

Richmond: Near Lebanon, Ohio.

Promopalæaster magnificus (Miller).

Palæaster magnificus Miller, Jour. Cincinnati Soc. Nat. Hist., 8, 1884, p. 16, pl. 4, figs. 3, 3a.—James, ibid., 18, 1895, p. 127.

Promopalæaster magnificus Schuchert, in Frech, Foss. Cat., 1, Anim., pt. 3, 1914, p. 33; Bull. U. S. Nat. Mus., 88, 1915, p. 122, pl. 21, fig. 1; pl. 22, fig. 1; pl. 23, figs. 1–3.

Richmond (Waynesville or Liberty): Waynesville, Ohio.

Holotype.—Cat. No. 40883, U.S.N.M.

Promopalæaster prenuntius Schuchert.

Promopalæaster prenuntius Schuchert, in Frech, Foss. Cat., 1, Anim., pt. 3, 1914, p. 34 (nom. nud.); Bull. U. S. Nat. Mus., 88, 1915, p. 107, pl. 13, fig. 3; pl. 15, fig. 5.

Trenton (Hermitage): Frankfort, Kentucky.

Promopalæaster speciosus (Meek).

Asterias antiquata Locke, Proc. Acad. Nat. Sci. Philadelphia, 3, 1848, p. 32, fig.

Palæasterina antiquata Shumard, Trans. Acad. Sci. St. Louis, 2, 1866, p. 382 (gen. ref.).

Palæaster antiquata Hall, 20th Rep. New York State Cab. Hist., 1868, p. 286; rev. ed., 1870, p. 328.—James, Jour. Cincinnati Soc. Nat. Hist., 18, 1895, p. 130.

Palæaster speciosus Meek, Amer. Jour. Sci., 3d ser., 4, 1872, p. 277; Geol. Surv. Ohio, Pal., 1, 1873, p. 61.—James, Jour. Cincinnati Soc. Nat. Hist., 18, 1895, p. 131.

Palæaster granulosa Meek (not Hall, 1868), Amer. Jour. Sci., 3d ser., 4, 1872, p. 276; Geol. Surv. Ohio, Pal., 1, 1873, p. 60, pl. 4, figs. 3a–c.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 576, figs.

Promopalæaster speciosus Schuchert in Frech, Foss. Cat., 1, Anim., pt. 3, 1914, p. 34, Bull. U. S. Nat. Mus., 88, 1915, p. 109, pl. 14, figs. 3, 4; pl. 15, figs. 1-4.

Maysville: Cincinnati, Ohio.

Observation.—Although antedating P. speciosa, Asterias antiquata was so poorly figured that it could not be recognized.

Promopalæaster spinulosus (Miller and Dyer).

Palæaster spinulosus Miller and Dyer, Jour. Cincinnati Soc. Nat. Hist., 1, 1875, p. 32, pl. 2, figs. 12, 12a, b.—James, ibid., 18, 1895, p. 129.

Promopalæaster spinulosus Schuchert in Frech, Foss. Cat., 1, Anim., pt. 3, 1914, p. 34; Bull. U. S. Nat. Mus., 88, 1915, p. 115, pl. 16, fig. 2; pl. 17, figs. 1, 2; pl. 18, figs. 1-3.

Palæaster longibrachiatus Miller, Jour. Cincinnati Soc. Nat. Hist., 1, 1878, p. 102, pl. 3, fig. 4.—James, ibid., 18, 1895, p. 132.

Richmond (Waynesville): Clarksville, Ohio.

Plesiotype.—Cat. No. 40881, U.S.N.M. (holotype of P. longibrachiatus).

Promopalæaster? wilsoni (Raymond).

Palæaster? wilsoni Raymond, Ottawa Nat., 26, 1912, p. 78, pl. 5, figs. 1-4.

Promopalæaster wilsoni Schuchert in Frech, Foss. Cat., 1, Anim., pt. 3, 1914, p. 34; Bull. U. S. Nat. Mus., 88, 1915, p. 106, pl. 13, figs. 1, 2.

Black River (Lowville): City View, near Ottawa, Ontario.

Promopalæaster wykoffi (Miller and Gurley).

Palæaster wykoffi Miller and Gurley, Bull. Illinois State Mus. Nat. Hist., 12, 1897, p. 46, pl. 3, fig. 27.

Promopalæaster wykoffi Schuchert in Frech, Foss. Cat., 1, Anim., pt. 3, 1914, p. 34; Bull. U. S. Nat. Mus., 88, 1915, p. 117, pl. 18, fig. 6; pl. 19, fig. 2.

Richmond: Near Madison, Indiana.

PROPORA of authors. See Lyellia Edwards and Haime.

PROSCORPIUS Whitfield. Genotype: P. osborni Whitfield.

Proscorpius Whitfield, Bull. Amer. Mus. Nat. Hist., 1, 1885, p. 183.—Miller, N. A. Geol. Pal., 1889, p. 571.

Proscorpius osborni (Whitfield).

Palæophonus osborni Whitfield, Science, 6, 1885, pp. 87, 88, fig.

Proscorpius osborni Whitfield, Bull. Amer. Mus. Nat. Hist., 1, 1885, p. 187, pl. 20.—Scudder, Zittel's Handb. Pal., 1 abth., 2, 1885, p. 739, fig. 915a.—Thorell, Amer. Nat., 20, 1886, p. 269.—Whitfield, Science, 7, 1886, p. 216.—Scudder, Bull. U. S. Geol. Surv., 31, 1886, p. 28.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 973, fig.—Laurie, Royal Soc. Edinburgh Trans., 39, 1899, p. 557, pl. 3.—Pocock, Quart. Jour. Micr. Sci., 2d ser., 1901, pp. 44, 309.—Fritsch, Pal. Arachniden, 1904, pp. 65, 78, fig. 81; Miscel. Pal., 1, Palæozoica, 1907, p. 6, pl. 3.—Clarke and Ruedemann, Mem. New York State Mus., 14, 1912, p. 387, pl. 88, figs. 81–83.

Cayugan (Bertie): Waterville, Oneida County, New York.

PROSSERELLA Grabau. See Reticularia subgenus Prosserella.

PROTARÆA Edwards and Haime. Genotype: Porites vetustus Hall.

Protaræa Edwards and Haime, Mon. d. Polyp. Foss. d. Terr. Pal. (Arch. du Mus. d'Hist. Nat., 5), 1851, pp. 146, 208; Ann. Sci. Nat., 3d ser., Zool., 16, 1851, p. 46.—Pictet, Traite de Pal., 2d ed., 4, 1857, p. 434.—Milne-Edwards, Hist. Nat. d. Corall., 3, 1860, p. 184.—Zittel, Handb. Pal., 1, 1879, p. 239.—Roemer, Leth. geog., pt. 1, Leth. Pal., 1883, p. 455.—Miller, N. A. Geol. Pal., 1889, p. 201.—James, Jour. Cincinnati Soc. Nat. Hist., 15, pt. 4, 1893, p. 149.—Sardeson, Neues Jarhb. Min., Geol., Pal., Beilage-Band, 10, 1896, p. 300.—Kiär, Palæontographica, 46, 1899, p. 9, footnote, pp. 10, 13.—Lindström, Kongl. Sven. Vet.-Akad. Handl., 32, 1899, pp. 37, 109.—Lambe, Cont. Can. Pal., Geol. Surv. Canada, 4, pt. 1, 1899, p. 89.—Kiär, Vid.-Selsk. Skrifter, Math.-naturw. Kl., No. 10, 1903, pp. 29, 50.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 700; Zittel-Eastman Textb. Pal., 2d ed., 1913, p. 112.

PROTARÆA MAGNA Kiär. See Protaræa vetusta magna.

Protaræa richmondensis Foerste.

Protaræa vetusta Edwards and Haime, Mon. d. Polyp. Foss. d. Terr. Pal. (Arch. du Mus. d'Hist. Nat., 5), 1851, p. 208, pl. 14, figs. 6, 6a.—Milne-Edwards, Hist. Nat. d. Corall., 3, 1860, p. 185.—Nicholson, Geol. Surv. Ohio, Pal., 2, 1875, p. 221.—White, 11th Ann. Rep. Indiana Dep. Geol. Nat. Hist., 1882, p. 49 fig. 4, p. 378.—Miller, N. A. Geol. Pal., 1889, p. 201, fig.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 774, fig.—James, Jour. Cincinnati Soc. Nat. Hist., 15, pt. 4, 1893, p. 149.—Winchell and Schuchert, Geol. Minnesota, 3, pt. 1, 1895, p. 94, pl. G, figs. 24, 25.—Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 2, 1895, p. 114 (loc. occ.); ibid., pt. 3, 1897, p. 155 (loc. occ.).—Kiär, Palæontographica, 46, 1899, p. 10, pl. 2, fig. 7.—Lindstrom, Kongl. Sven. Vet.-Akad. Handl., 32, 1899, p. 111, pl. 12, figs. 19–24.

Thecia vetusta Davis, Kentucky Foss. Corals, Geol. Surv. Kentucky, pt. 2, 1885, pl. 34, figs. 8–10.

Protarea richmondensis Foerste, Bull. Sci. Lab. Denison Univ., 14, 1909, p. 210, pl. 4, figs. 9a–b; p. 308, pl. 7, fig. 8.

Richmond: Dayton, etc., Ohio; Indiana; Kentucky; Tennessee; Illinois; Minnesota; etc.

Plesiotypes.—Cat. No. 52638, U.S.N.M. (Davis).

Observation.—Compare Protaræa tenuis (Billings).

Protaræa richmondensis papillata Foerste.

Protarea richmondensis-papillata Foerste, Bull. Sci. Lab. Denison Univ., 14, 1909, p. 309, pl. 10, fig. 2.

Richmond (Whitewater): Dayton, Ohio.

Protaræa tenuis (Billings).

Heliolites tenuis Billings, Canadian Nat. Geol., n. s., 2, 1865, p. 428; Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 32.—Nicholson and Etheridge, Mon. Sil. Foss. Girvan District, 1880, p. 247.—Roemer, Leth. Geog., pt. 1, Leth. Pal., 1883, p. 508.

Gamachian (Ellis Bay): Gamache Bay, Anticosti.

Observation.—Compare Protarea richmondensis Foerste.

Protaræa verneuili Edwards and Haime. Not recognizable.

Protaræa verneuili Edwards and Haime, Mon. d. Polyp. Foss. d. Terr. Pal. (Arch du Mus. d'hist. Nat., 5), 1851, p. 209; Ann. Sci. Nat., 3d ser., Zool., 16, 1851, p. 47.—Milne-Edwards, Hist. Nat. d. Corall., 3, 1860, p. 185.—Duncan, Rep. 41st Meeting British Assoc. Adv. Sci., 1872, p. 123.—Roemer, Leth. geog., pt. 1, Leth. Pal., 1883, p. 455.—James, Jour. Cincinnati Soc. Nat. Hist., 15, pt. 4, 1893, p. 150.—Lindstrom, Kongl. Sven. Vet.-Acad. Handl., 32, No. 1, 1899, p. 110.—Foerste, Bull. Sci. Lab. Denison Univ., 14, 1909, p. 309 (see for remarks).

Lower Silurian: Alexanderville, Ohio.

PROTARÆA VETUSTA of authors. See Protaræa richmondensis.

Protaræa vetusta (Hall).

Porites? vetusta Hall, Pal. New York, 1, 1847, p. 71, pl. 25, figs. 5a, b.

Astræopora vetusta D'Orbigny, Prodr. de Pal., 1, 1850, p. 25 (gen. ref.).

Heliolites vetusta Hall, 12th Rep. New York State Cab. Nat. Hist., 1859, p. 74 (gen. ref.).

Protaræa vetusta, Edwards and Haime, Ann. Sci. Nat., 3d ser., Zool., 16, 1851, p. 47.—Nicholson, Rep. Pal. Prov. Ontario, pt. 2, 1875, p. 9.—Roemer, Leth. geog., pt. 1, Leth. Pal., 1883, p. 455.—Lambe, Cont. Canadian Pal. Geol. Surv. Canada, 4, pt. 1, 1899, p. 90, pl. 5, figs. 8, 8a.

Trenton: Watertown, etc., New York; Ontario; Minnesota, etc.

Protaræa vetusta magna Whiteaves.

Protarea (vetusta? var.) magna Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 3, 1897, p. 155, pl. 18, figs. 2, 3, 3a.

Protarea vetusta var. magna Lambe, Cont. Canadian Pal., Geol. Surv. Canada, 4, pt. 1, 1899, p. 91.

Protaræa magna Kiär, Vid.-Selsk. Skrifter, Math. naturw. Kl., No. 10, 1903, p. 50.

Richmond: Lower Fort Garry, Manitoba.

Protaræa walkeri (Spencer).

Caunopora walkeri Spencer, Trans. Acad. Sci. St. Louis, 4, 1884, p. 596, pl. 6, figs. 9, 9a; Bull. Mus. Univ. Missouri, 1, 1884, p. 46, pl. 4, figs. 9, 9a; Canadian Nat., 10, 1883, p. 165.—Miller, N. A. Geol. Pal., 1889, p. 156, fig.—Nicholson, Mon. British Strom., 1892, p. 26.—Whiteaves, Canadian Rec. Sci. 7, 1896, p. 144.

Protarea walkeri Parks, Univ. Toronto Studies (Geol. Ser.), No. 5, 1908, p. 60, pl. 15, figs. 1, 2.

Niagaran (?Rochester): Hamilton, Ontario.

PROTASTER Forbes. Genotype: P. sedgwicki Forbes.

Protaster Forbes, Mem. Geol. Surv. United Kingdom, dec. 1, 1849, pp. 1–2, pl. 4.—Murchison, Siluria, 1854, p. 221, fig. 39–4.—Forbes, in McCoy's Pal. Rocks Foss., 1855, p. 60.—Salter, Rep. 26th Meeting British Assoc. Adv. Sci., Notes, Abstracts, 1857, p. 76; Ann. Mag. Nat. Hist., 2d ser., 20, 1857, p. 325.—Pictet, Traité de Pal., 2d ed., 4, 1857, p. 277.—Hall, Pal. New York, 3, for

PROTASTER—Continued.

1859, 1861, p. 134.—Salter, Ann. Mag. Nat. Hist., 3d ser., 8, 1861, p. 484.—Wright, Mon. British Foss. Echinod., Oolitic, 2, pt. 1, (Pal. Soc. for 1861), 1862, pp. 23, 31.—Hall, 20th Rep. New York State Cab. Nat. Hist., 1868, p. 293; rev. ed., 1870, p. 335.—Quenstedt, Petrefactenkunde Deutschlands, 1, 4, 1876, p. 133, pl. 95, fig. 11.—Zittel, Handb. Pal., 1, 1879, p. 444.—Stürtz, Palæontographica, 32, 1886, pp. 80, 83, 93; Neues Jahrb. Min., Geol. Pal., 2, 1886, p. 148.—Miller, N. A. Geol. Pal., 1889, p. 276.—Gregory, Geol. Mag., dec. 3, 6, 1889, p. 26.—Stürtz, Verh. naturh. Ver. preuss. Reinl., etc., 1893, p. 18.—James, Jour. Cincinnati Soc. Nat. Hist., 18, 1896, pp. 137, 138.—Gregory, Proc. Zool. Soc. London, 1897, p. 1031, fig. 1.—Whidborne, Mon. Dev. Fauna South England, 3, Pal. Soc., 1898, p. 206.—Parks, Trans. Canadian Inst., 8, 1908, pp. 363, 366.—Schöndorf, Jahrb. nassauisch. Ver. Naturk. Wiesbaden, 63, 1910, p. 238.—Schuchert, Bull. U. S. Nat. Mus., 88, 1915, p. 224.

Encrinaster (part) Haeckel, Gen. Morphologie, 2, 1866, p. lxvii (no definition).

PROTASTER ELEGANS Parks. See Tæniaster elegans.

PROTASTER FLEXUOSUS Miller and Dyer. See Alepidaster flexuosus.

PROTASTER? GRANULIFERUS Meek. See Alepidaster granuliferus.

PROTASTER MIAMIENSIS Miller. See Alepidaster miamiensis.

Protaster stellifer Ringueberg.

Protaster stellifer Ringueberg, Bull. Buffalo Soc. Nat. Hist., 5, 1886, p. 7, pl. 1, fig. 2—Schuchert, Bull. U. S. Nat. Mus., 88, 1915, p. 228.

Clinton (Rochester): Lockport, New York, and Grimsby, Ontario.

Protaster whiteavesiana Parks.

Protaster whiteavesiana Parks, Trans. Can. Institute, 8, 1908, p. 368, figs. 1–6.—Schuchert, Bull. U. S. Nat. Mus., 88, 1915, p. 227.

Trenton (Curdsville): Kirkfield, Ontario.

PROTASTERACANTHION Stürtz. See Urasterella McCoy.

PROTASTERINA Ulrich. See Alepidaster Meek.

PROTASTERINA Billings (part). See Schuchertia Gregory.

PROTAXOCRINUS Springer. Genotype: Taxocrinus ovalis Angelin.

Lecanocrinus Billings (not Hall), Geol. Surv. Canada, Can. Org. Rem., dec. 4, 1859, p. 46.

Taxocrinus Angelin (part), Icon. Crin. Suec., 1878, p. 8.—Wachsmuth and Springer, Proc. Acad. Nat. Sci. Philadelphia, Rev. Pal., 1, 1879, p. 50.

Protaxocrinus Springer, Jour. Geol., 14, 1906, pp. 515, 519; Zittel-Eastman Textb. Pal., 2d ed., 1913, p. 205; Mono. Crin. Flex., Smith. Inst. (in press).

Protaxocrinus elegans (Billings).

Lecanocrinus elegans Billings, Geol. Surv. Canada, Rep. Progr. for 1853–1856, 1857, p. 278; Geol. Surv. Canada, dec. 4, 1859, p. 47, pl. 4, figs. 4a, 4b.

Taxocrinus elegans Wachsmuth and Springer, Proc. Acad. Nat. Sci. Philadelphia, 1886, p. 68 (Rev. Pal., pt. 3, p. 144).—Miller, N. A. Geol. Pal., 1889, p. 285, fig. 440.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 564.

Protaxocrinus elegans Springer, Geol. Surv. Canada, Mem. 15P, 1911, p. 11 (gen. ref.); Mono. Crin. Flex., Smith. Inst. (in press).

Trenton (Curdsville): Ottawa, Ontario.

Protaxocrinus lævis (Billings).

Lecanocrinus lævis Billings, Geol. Surv. Canada, Rep. Progr. for 1853–1856, 1857, p. 278; Geol. Surv. Canada, dec. 4, 1859, p. 47, pl. 4, fig. 3a.

Taxocrinus lævis Wachsmuth and Springer, Proc. Acad. Nat. Sci. Philadelphia, 1886, p. 68 (Rev. Pal., pt. 3, p. 144).

Protaxocrinus lævis Springer, Geol. Surv. Canada, Mem. 15P, 1911, p. 11, pl. 3, figs. 10, 11; Mono. Crin. Flex., Smith. Inst. (in press).

Trenton (Curdsville): Ottawa and Kirkfield, Ontario.

Protaxocrinus robustus Springer.

Protaxocrinus robustus Springer, Mono. Crin. Flex., Smith. Inst. (in press).

Niagaran (Brownsport): Decatur County, Tennessee.

Protaxocrinus virginiensis Springer.

Protaxocrinus virginiensis Springer, Mono. Crin. Flex., Smith. Inst. (in press).

Helderbergian (Keyser): Keyser, West Virginia.

PROTEROCAMEROCERAS Ruedemann. See Cameroceras Conrad.

PROTEROPILOCERAS Ruedemann. See Piloceras Salter.

PROTICHNITES Owen. Genotype: P. septemnotatus Owen.

Protichnites Owen, Quart. Jour. Geol. Soc. London, 8, 1852, p. 214.—Billings, Canadian Nat. Geol., 1, 1857, pp. 35–39.—Dawson, Canadian Nat. Geol., 7, 1862, pp. 271–277.—Chapman, Expos. Minerals Geol. Canada, 1864, pp. 159, 160.—Billings, Quart. Jour. Geol. Soc. London, 26, 1870, pp. 484–485.—Chapman, Canadian Jour. Sci. Lit. Hist., n. s., 15, 1877, pp. 486–490.—Dawson, Quart. Jour. Geol. Soc. London, 46, 1890, pp. 599–601, figs. 4 and 5a.—Packard, Proc. Amer. Acad. Arts Sci. Boston, 36, 1900, pp. 63–71.—Walcott, Smiths. Misc. Coll., 57, 1912, p. 275.

Protichnites alternans Owen.

Protichnites alternans Owen, Quart. Jour. Geol. Soc. London, 8, 1852, pp. 214–217, pl. 9.—Logan, Geol. Canada, 1863, p. 104, fig. 13.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 775, fig.

Upper Cambrian or Ozarkian (Potsdam): Near Beauharnois, Quebec.

Protichnites latus Owen.

Protichnites latus Owen, Quart. Jour. Geol. Soc. London, 8, 1852, p. 218, pl. 11.

Upper Cambrian or Ozarkian (Potsdam): Near Beauharnois, Quebec.

Protichnites lineatus Owen.

Protichnites lineatus Owen, Quart. Jour. Geol. Soc. London, 8, 1852, p. 220, pl. 13 and pl. 8A, 3.—Billings, Geol. Canada, Geol. Surv. Canada, 1863, p. 104, fig.—Lesley, Rep. Geol. Surv. Pennsylvania, P 4, 1889, p. 776, figs.

Upper Cambrian or Ozarkian (Potsdam): Near Beauharnois, Quebec.

Protichnites logananus Marsh.

Protichnites logananus Marsh, Amer. Jour. Sci., 2d. ser., 48, 1869, pp. 46–49; Proc. Amer. Assoc. Adv. Sci., 17, 1869, pp. 322–324.—Walcott, Smiths. Misc. Coll., 57, 1912, p. 279, pl. 48–49.

Upper Cambrian or Ozarkian (Potsdam): Essex County, New York.

Plesiotype.—Cat. No. 58402, U.S.N.M.

Protichnites multinotatus Owen.

Protichnites multinotatus Owen, Quart. Jour. Geol. Soc. London, 8, 1852, pp. 214–217, pl. 9.—Logan, Geol. Canada, 1863, p. 104, fig. 14.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 776, figs.

Upper Cambrian or Ozarkian (Potsdam): Near Beauharnois, Quebec.

Protichnites octonotatus Owen.

Protichnites octonotatus Owen, Quart. Jour. Geol. Soc. London, 8, 1852, p. 214–217, pl. 9.—Logan, Geol. Canada, 1863, p. 104, figs. 16, 17.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 776, figs.

Upper Cambrian or Ozarkian (Potsdam): Near Beauharnois, Quebec.

Protichnites septemnotatus Owen.

Protichnites septem-notatus Owen, Quart. Jour. Geol. Soc. London, 8, 1852, pp. 214–217, pl. 9.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 776, figs.—Walcott, Smiths. Misc. Coll., 57, No. 7, 1912, p. 278, pls. 46, 47.

Upper Cambrian or Ozarkian (Potsdam): Near Beauharnois, Quebec.

Plesiotype.—Cat. Nos. 58592, 58593, U.S.N.M.

PROTOCRISINA Ulrich. Genotype: P. exigua Ulrich.

Protocrisina Ulrich, Geol. Surv. Illinois, 8, 1890, p. 369.—(Ulrich, in press), Miller, N. A. Geol. Pal., 1889, p. 317.—Ulrich, Zittel's Textb. Pal. (Engl. ed.), 1896, p. 262.—Pocta, Syst. Sil. Centre Boheme, 8, pt. 1, 1894, p. 16.—Nickles and Bassler, Bull. U. S. Geol. Surv., 1900, p. 21.—Bassler, Bull. U. S. Nat. Mus., 77, 1911, pp. 71, 72; Zittel-Eastman Textb. Pal., 1913, p. 320.

Protocrisina exigua Ulrich.

Protocrisina exigua Ulrich, Geol. Surv. Illinois, 8, 1890, p. 405, pl. 29, figs. 4–4c; pl. 43, figs. 11–11e; Zittel's Textb. Pal. (Engl. ed.), 1896, fig. 417 (p. 262).—Cumings, Amer. Jour. Sci., 4th ser., 20, 1905, pl. 7, fig. 53.—Bassler, Bull. U. S. Nat. Mus., 77, 1911, p. 73, fig. 17; Zittel-Eastman Textb. Pal., 1913, p. 320, fig. 443.

Crisinella œilensis Wiman, Bull. Geol. Univ. Upsala, 5, pt. 2, 1902, p. 181, pl. 6, figs. 12–16.

Richmond: Wilmington, Illinois; central Tennessee (Fernvale); Anticosti (Charleton); Island of Gotland (Borkholm drift).

Figured sections of *cotype*.—Cat. Nos. 43287, 43288, U.S.N.M.

Protocrisina perantiqua (Hall).

Gorgonia perantiqua Hall, Pal. New York, 1, 1847, p. 76, pl. 26, figs. 5a, b.

Enallopora perantiqua D'Orbigny, Prodr. de Pal., 1, 1850, p. 22.—Emmons, Amer. Geol., 1, pt. 2, p. 206, pl. 7, figs. 5a, b.—Miller, N. A. Geol. Pal., 1889, p. 301.

Protocrisina perantiqua Bassler, Bull. U. S. Nat. Mus., 77, 1911, p. 71 (gen. ref.).

Trenton: Middleville, Trenton Falls, etc., New York; Montreal, Quebec.

PROTOCYCLOCERAS Hyatt. Genotype: Orthoceras lamarcki Hall.

Protocycloceras Hyatt, Zittel-Eastman Textb. Pal., 1, 1900, p. 518.—Ruedemann, Bull. New York State Mus., 90, 1906, p. 438.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 55.—Hyatt, Zittel-Eastman Textb. Pal., 2d ed., 1913, p. 599.

Protocycloceras(?) furtivum (Billings).

Orthoceras furtivum Billings, Geol. Can. Pal. Foss., 1, 1865, p. 348, fig. 337.

Protocycloceras(?) cf. furtivum Ruedemann, Bull. New York State Mus., 90, 1906, p. 445, pl. 16, fig. 3.

Canadian (Beekmantown): Township of Kitley, Canada; Beekmantown, New York.

Protocycloceras lamarcki (Billings).

Orthoceras Lamarcki Billings, Canadian Nat. Geol., 4, 1859, p. 362; Geol. Canada, Geol. Surv. Canada, 1863, p. 121, fig. 38a–c; Pal. Foss., 1, Geol. Surv. Canada, 1865, pp. 255, 347, fig. 336.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 551, figs.

Protocycloceras lamarcki—Continued.

Protocycloceras lamarcki Hyatt, Zittel-Eastman Textb. Pal., 1, 1900, p. 518 (gen. ref.).—Ruedemann, Bull. New York State Mus., 90, 1906, p. 441, pl. 15, figs. 1–6; pl. 16, figs. 1–2; figs. 15, 16.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 56, fig. 1255.

Canadian: Mingan Islands; Godmanchester, and Leeds and Grenville counties, Canada; Newfoundland; Beekmantown, etc., New York (Beekmantown).

Protocycloceras whitfieldi Ruedemann.

Orthoceras bilineatum Whitfield, Bull. Amer. Mus. Nat. Hist., 3, 1890, p. 35, pl. 2, fig. 5, fig. 17a-b.

Protocycloceras whitfieldi Ruedemann, Bull. New York State Mus. Nat. Hist., 90, 1906, p. 443, fig. 17a, pl. 15, fig. 7.

Canadian (Beekmantown): Fort Cassin, Vermont.

PROTOKIONOCERAS Grabau and Shimer.

Genotype: Orthoceras medullare Hall

Protokionoceras Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 58.

Protokionoceras crebescens (Hall).

Orthoceras crebescens Hall, 20th Rep. New York State Cab. Hist., 1868, p. 354, pl. 19 (10), figs. 1–3; rev. ed., 1870, p. 413, pl. 19, figs. 1–3.—Chamberlin, Geol. Wisconsin, 1, 1883, p. 194, fig.—Whiteaves, Pal. Foss. Geol. Surv. Canada, 3, pt. 1, 1884, p. 37; ibid., pt. 2, 1895, p. 98.—Newell, Proc. Boston Soc. Nat. Hist., 23, 1888, p. 466.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 545, fig.—Clarke and Ruedemann, Mem. New York State Mus., 5, 1903, p. 80, pl. 10, figs. 24, 27, 28; pl. 11, figs. 2–5.

Protokionoceras crebescens Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 58, fig. 1263.

Niagaran: Racine, etc., Wisconsin (Waukesha, Racine, and Guelph); Hespeler, Elora, etc., Ontario; Shelby, New York (Guelph).

Protokionoceras medullare (Hall).

Orthoceras medullare Hall, 20th Rep. New York State Cab. Hist., 1868, p. 353, pl. 20, figs. 1, 2; p. 381; rev. ed., 1870, p. 412, pl. 20, figs. 1, 2.—Meek and Worthen, Geol. Surv. Illinois, 6, 1875, p. 504, pl. 26, fig. 1.—Hall, 11th Ann. Rep. Indiana Dep. Geol. Nat. Hist., 1882, p. 323; Trans. Albany Inst., 10, 1883, p. 74.—Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 1, 1884, p. 37.—Keyes, Missouri Geol. Surv., 5, 1894, p. 227.—Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 2, 1895, p. 99 (loc. occ.).—Grabau, Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 216; Bull. New York State Mus., 45, 1901, p. 216.—Kindle and Breger, 28th Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1904, p. 469, pl. 19, figs. 1, 2.

Orthoceras (Kionoceras) medullare Clarke and Ruedemann, Bull. New York State Mus., 65, 1903, p. 811 (gen. ref.).

Kionoceras medullare Clarke and Ruedemann, Mem. New York State Mus., 65, 1903, p. 86, pl. 10, fig. 23.

Protokionoceras medullare Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 58, fig. 1262.

Clinton-Niagaran: Waukesha, etc., Wisconsin (Racine); Elora, Ontario; New York; Delphi, Indiana; etc.

Protokionoceras trusitum (Clarke and Ruedemann).

Orthoceras trusitum Clarke and Ruedemann, Mem. New York State Mus., 5, 1903, p. 77, pl. 10, figs. 25, 26; pl. 13, figs. 1–10.

rotokionoceras trusitum—Continued.

Protokionoceras trusitum Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 59.

Orthoceras cf. trusitum Grabau, Michigan Geol. Surv., Geol., 1st ser., 1909, p. 196.

Niagaran (Guelph): Shelby and Rochester, New York.

Cayugan (Cobleskill): Schoharie, New York.

?Upper Monroan (Lucas): Grosse Isle, Detroit River, Michigan.

PROTOPALÆASTER Hudson. See Hudsonaster Stürtz.

PROTOPELTURA Brögger. Genotype: Olenus? acanthurus Angelin.

Protopeltura Brögger, Die Sil. Etagen 2-3, Kristiania, 1882, p. 105.—Koken, Die Leitfossilien, Leipzig, 1896, p. 357.—Moberg and Moller, Geol. Foren. Stockholm Forhandl., 20, 1898, p. 265.

Protopeltura acanthura tetracanthura Matthew.

Protopeltura acanthura var. tetracanthura Matthew, Trans. Royal Soc. Canada, 9, sec. 4, 1892, p. 53, pl. 13, figs. 8a–c.

Canadian (Bretonian—Div. C3a): Germain Street, St. John, New Brunswick.

ROTOPHRAGMOCERAS Hyatt. Genotype: Cyrtoceras murchisoni Barrande.

Protophragmoceras Hyatt, Zittel-Eastman Textb. Pal., 1900, p. 532; ibid., 2d ed., 1913, p. 612.

rotophragmoceras hercules (Winchell and Marcy).

Lituites Hercules Winchell and Marcy, Mem. Boston Soc. Nat. Hist., 1, 1865, p. 102, pl. 3, fig. 9.

Gyroceras Hercules Chamberlin, Geol. Wisconsin, 1, 1883, p. 194, fig.

Cyrtoceras hercules Hall, 20th Rep. New York State Cab. Nat. Hist., rev. ed., 1870, p. 409, pl. 17, figs. 6, 7.

Halloceras(?) hercules Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 77, fig. 1292.

Cyrtoceras (Phragmoceras?) amplicorne Hall, 20th Rep. New York State Cab. Hist., 1868, p. 358, pl. 17 (8), figs. 6, 7; p. 393.

Niagaran (Racine): Chicago, Illinois; Wisconsin.

rotophragmoceras hercules carrollense (Kindle and Breger).

Lituites (Ophidioceras?) hercules carrollensis Kindle and Breger, 28th Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1904, p. 474, pl. 16, fig. 1; pl. 17, fig. 1.

Niagaran: Delphi, Indiana.

rotophragmoceras patronus Clarke and Ruedemann.

Protophragmoceras patronus Clarke and Ruedemann, Mem. New York State Mus., 5, 1903, p. 97, pl. 19, figs. 1, 2.

Niagaran (Guelph): Shelby, New York.

ROTORETOPORA Zittel. See Polypora McCoy.

ROTORHYNCHA Hall and Clarke.

Genotype: P. dubia Hall and Clarke=P. ridleyana Safford.

Protorhyncha Hall and Clarke, Pal. New York, 8, pt. 2, 1893, p. 180; 13th Ann. Rep. New York State Geol., 1895, p. 824.—Schuchert, Zittel-Eastman Textb. Pal., 1, 1900, p. 323; 2d ed., 1913, p. 396.—Raymond, Ann. Carnegie Mus., 7, 1911, p. 226.

Observation.—See Raymond (1911) for discussion of this genus. Hall and Clarke based their generic description upon specimens of Rhynchonella ridleyana Safford from High Bridge, Kentucky, which they incorrectly identified as Atrypa dubia Hall.

PROTORHYNCHA ÆQUIRADIATA Hall and Clarke. See Camarotœchia æquiradiata.

PROTORHYNCHA DUBIA Hall and Clarke. See Protorhyncha ridleyana.

Protorhyncha dubia Hall.
Atrypa dubia Hall, Pal. New York, 1, 1847, p. 21, pl. 4 bis, fig. 5.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 192, pl. 3, fig. 23.
Rhynchonella dubia Hall, 12th Rep. New York State Cab. Nat. Hist., 1859, p. 66.
Protorhyncha dubia Hall and Clarke (part), Pal. New York, 2, 1893, p. 180.—Raymond, Ann. Carnegie Mus., 7, 1911, p. 226.
Chazyan: Chazy, New York.

Observation.—Neither defined nor figured so as to be recognizable. As the original type is lost, the name should be dropped. (See Raymond, 1911.)

Protorhyncha ridleyana (Safford).
Rhynchonella Ridleyana Safford, Geol. Tennessee, 1869, p. 287 (nom. nud.).
Protorhyncha ridleyana Hayes and Ulrich, U. S. Geol. Surv., folio 95, Faunal chart, 1903 (gen. ref.).
Protorhyncha dubia Hall and Clarke (part), Pal. New York, 8, pt. 2, 1893, p. 180.
Catazyga uphami-australis Foerste, Bull. Sci. Lab. Denison Univ., 16, 1910, p. 31, pl. 2, figs. 19a–b; pl. 3, figs. 14a–c.
Stones River (Pierce and Ridley): Murfreesboro, etc., Tennessee; bottom of gorge, High Bridge, Kentucky.

PROTORTHIS Hall and Clarke. Genotype: Orthis billingsi Hartt.
Protorthis Hall and Clarke, 11th Ann. Rep. State Geol. New York for 1891, 1892, pp. 273, 274; 45th Ann. Rep. New York State Mus., 1892, pp. 589, 590; Pal. New York, 8, pt. 1, 1892, pp. 231–233.—Walcott, Proc. U. S. Nat. Mus., 28, 1905, pp. 280, 281.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 211.—Walcott, Smiths. Misc. Coll., 53, 1908, pl. 11, and pp. 142, 147; Mon. U. S. Geol. Surv., 51, 1912, p. 738.

Protorthis? cassinensis Whitfield.
Protorthis cassinensis Whitfield, Bull. Amer. Mus. Nat. Hist., 9, 1897, p. 173, pl. 4, figs. 1, 2.—Seely, Vermont State Geol. Rep., 7, 1910, pl. 61, figs. 1, 2.
Canadian (Beekmantown): Fort Cassin, Vermont.

Protorthis? minima Whitfield.
Protorthis minima Whitfield, Bull. Amer. Mus. Nat. Hist., 9, 1897, p. 178, pl. 4, figs. 3, 4.—Seely, Vermont State Geol. Rep., 7, 1910, pl. 61, figs. 3, 4.
Canadian (Beekmantown): Fort Cassin, Vermont.

PROTOSCOLEX Ulrich. Genotype: P. covingtonensis Ulrich.
Protoscolex Ulrich, Jour. Cincinnati Soc. Nat. Hist., 1, 1878, p. 89.—Miller, N. A. Geol. Pal., 1889, p. 520.—Miller and Faber, Jour. Cincinnati Soc. Nat. Hist., 15, 1892, p. 83.

Protoscolex covingtonensis Ulrich.
Protoscolex covingtonensis Ulrich, Jour. Cincinnati Soc. Nat. Hist., 1, 1878, p. 89, pl. 4, fig. 2.
Eden (Economy): Covington, Kentucky.
Holotype.—Cat. No. 46537, U.S.N.M.

Protoscolex magnus Miller and Faber.
Protoscolex magnus Miller and Faber, Jour. Cincinnati Soc. Nat. Hist., 15, 1892, p. 83, pl. 1, figs. 5, 6.
Eden (Fulton): First ward, Cincinnati, Ohio.

rotoscolex ornatus Ulrich.

Protoscolex ornatus Ulrich, Jour. Cincinnati Soc. Nat. Hist., 1, 1878, p. 90, pl. 4, fig. 1.—Miller, N. A. Geol. Pal., 1889, p. 520, fig. 941.

Eden (Economy): Covington, Kentucky.

Cotypes.—Cat. No. 46538, U.S.N.M.

Protoscolex simplex Ulrich.

Protoscolex simplex Ulrich, Jour. Cincinnati Soc. Nat. Hist., 1, 1878, p. 91, pl. 4, fig. 4.

Eden (Economy): Covington, Kentucky.

Holotype.—Cat. No. 46539, U.S.N.M.

Protoscolex tenuis Ulrich.

Protoscolex tenuis Ulrich, Jour. Cincinnati Soc. Nat. Hist., 1, 1878, p. 90, pl. 4, fig. 3.

Eden (Economy): Covington, Kentucky.

Holotype.—Cat. No. 46540, U.S.N.M.

PROTOSPONGIA Salter. Genotype: P. fenestrata Salter.

Protospongia Salter, Quart. Jour. Geol. Soc. London, 20, 1864, p. 238.—Roemer, Leth. geog., 1, Theil, Leth. Pal., Erste Lief, 1880, p. 315.—Sollas, Quart. Jour. Geol. Soc. London, 36, 1880, p. 362.—Hinde, Canadian Rec. Sci., 3, 1888, p. 64; Mon. British Foss. Sponges, Pal. Soc., 1888, p. 105.—Miller, N. A. Geol. Pal., 1889, p. 163.—Schluter, Zeits. d. d. geol. Gesell., 44, 1892, p. 616.—Matthew, Trans. Royal Soc. Canada, 10, sec. 4, 1893, p. 95.—Rauff, Palæontographica, 40, 1894, p. 233.—Matthew, Trans. New York Acad. Sci., 14, 1895, p. 112, pl. 2, fig. 5.—Dawson, Trans. Royal Soc. Canada, 2d ser., 2, sec. 4, 1896, p. 101.

Diagoniella Rauff, Palæontographica, 40, 1894, p. 248. (Genotypes: Protospongia coronata and P. cyathiformis.)

rotospongia (Diagoniella) coronata Dawson and Hinde.

Protospongia coronata Dawson and Hinde, Trans. Royal Soc. Canada, 7, sec. 4, 1890, p. 41, figs. 8–10; pl. 3, fig. 4.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 780, figs.—Dawson, Trans. Royal Soc. Canada, 2d ser., 2, sec. 4, 1896, p. 106, pl. 2, figs. 5, 6; figs. 13–15; ibid., 2d ser., 2, sec. 4, 1895, p. 106, figs. 13–15; pl. 2, figs. 5, 6.

Protospongia? (Diagoniella) coronata Rauff, Palæontographica, 40, 1894, p. 248, pl 1, figs. 21, 22.

Canadian? (Levis?): Metis, Quebec.

rotospongia (Diagoniella) cyathiformis (Dawson and Hinde).

Protospongia cyathiformis Dawson and Hinde, Trans. Royal Soc. Canada, 7, sec. 4, 1890, p. 43, figs. 13, 14; pl. 3, fig. 6.—Dawson, ibid., 2d ser., 2, sec. 4, 1896; p. 107, figs. 15, 16, pl. 2, figs. 7–8.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 781, figs.

Protospongia? (Diagoniella) cyathiformis Rauff, Palæontographica, 40, 1894, p. 248, pl 3, figs 4, 5.

Canadian? (Levis?): Metis, Quebec.

Protospongia delicatula Dawson and Hinde.

Protospongia delicatula Dawson and Hinde, Trans. Royal Soc. Canada, 7, sec. 4, 1890, p 43, fig. 15; ibid., 2d ser., 2, sec. 4, 1896, p. 105, figs. 11, 12.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 782, figs.—Rauff, Palæontographica, 40, 1894, p. 257.

Canadian? (Levis?): Metis, Quebec.

Protospongia mononema Dawson and Hinde.

Protospongia mononema Dawson and Hinde, Trans. Roy. Soc. Canada, 7, sec. 4, 1890, p. 40, figs. 5–7, pl. 3, fig. 3.—Dawson, ibid., 2d ser., 2, sec. 4, 1896, p. 103, figs. 6–8, pl. 1, figs. 2, 3.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 781, figs.—Rauff, Palæontographica, 40, 1894, p. 247, pl. 2, figs. 2, 3.

Canadian? (Levis?): Metis, Quebec.

Protospongia polynema Dawson and Hinde.

Protospongia polynema Dawson and Hinde, Trans. Roy. Soc. Canada, 7, sec. 4, 1890, p. 42, figs. 11, 12, pl. 3, fig. 5.—Dawson, ibid., 2d ser., 2, sec. 4, 1896, p. 104, figs. 9, 10.—Lesley, Geol. Surv. Pennsylvania Rep. P 4, 1889, p. 782, figs.—Rauff, Palæontographica, 40, 1894, p. 247.

Canadian? (Levis?): Metis, Quebec.

Protospongia tetranema Dawson.

Protospongia tetranema Dawson, Canadian Rec. Sci., 3, 1888, p. 52, fig. 1.—Hinde, ibid., 1888, p. 63.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 782, figs.—Dawson and Hinde, Trans. Roy. Soc. Canada, 7, sec. 4, 1890, pp. 37–39, figs. 1–4, pl. 3, figs. 1, 2.—Dawson, ibid., 2d ser., 2, sec. 4, 1896, pp. 101–103, figs. 1–5, pl. 1, figs. 1, 4.—Rauff, Palæontographica, 40, 1894, p. 246, pl. 1, figs. 19, 20.

Canadian? (Levis?): Metis, Quebec.

PROTOSTIGMA Lesquereux. Genotype: P. sigillarioides Lesquereux.

Protostigma Lesquereux, Proc. Amer. Phil. Soc., 1877, p. 169.—Miller, N. A. Geol. Pal., 1889, p. 135.

Protostigma sigillaroides Lesquereux.

Protostigma sigillaroides Lesquereux, Proc. Amer. Phil. Soc., 17, 1877, p. 169; pl. 1, figs. 7, 8.—Miller, Proc. Davenport Acad. Sci., 2, 1878, p. 206.—Saporta, Le Mondes des Plantes, Appar. Homme, 1879, p. 167, figs. 4, 6.—Lesquereux, Chain of Life, 1880, p. 92, fig. 84b.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 783, figs.

Eden (McMicken) and Richmond (Waynesville): Cincinnati and Oregonia, Ohio.

Observation.—A second species is probably represented in the Richmond specimen, which may belong to the Glyptoceras section of Cyrtoceras.

PROTOVIRGULARIA McCoy. Genotype: P. dichotoma McCoy.

Protovirgularia McCoy, Ann. Mag. Nat. Hist., 6, 1850, p. 272.

Protovirgularia dichotoma McCoy.

Protovirgularia dichotoma McCoy, Ann. Mag. Nat. Hist., 6, 1850, p. 272; British Ass'n 20th Rep., 1851, p. 107; British Pal. Foss., 1853, p. 10, pl. 1B, figs. 11, 12.—Malaise, Bull. Acad. Roy. Belge., 20, 1890, p. 447.—Ruedemann, Mem. New York State Mus., 11, pt. 2, 1908, p. 243.

Middle Ordovician: England; Stockport, New York (Normanskill).

Plesiotypes.—Cat. No. 54253, U.S.N.M.

PROTOWARTHIA Ulrich and Scofield. See Sinuites Koken.

PROTOZEUGA Twenhofel. Genotype: Waldheimia mawii Davidson.

Protozeuga Twenhofel in Savage, Bull. Geol. Surv. Illinois, 23, 1913, pp. 16, 51.—Twenhofel, Bull. Victoria Mem. Mus., 3, 1914, p. 29.

Waldheimia Davidson, Suppl. Sil. Foss. Brach., 1882, p. 76.

Protozeuga anticostiana Twenhofel.
Protozeuga anticostiana Twenhofel, Bull. Victoria Mem. Mus., 3, 1914, p. 31, pl. 1, figs. 8–10.
Richmond (English Head, Charleton): English Head, etc., Anticosti.

Protozeuga sulcocarinata Savage.
Protozeuga sulcocarinata Savage, Bull. Geol. Surv. Illinois, 23, 1913, p. 51, pl. 1, figs. 19–21; pl. 5, fig. 6.
Upper Medinan: Near Thebes, Illinois (Girardeau); Louisiana, Missouri (Edgewood—Noix).

PROTOZYGA Hall and Clarke. See Zygospira Hall.

PSEUDOCRINITES Pearce. Genotype: P. bifasciatus Pearce.
Pseudocrinites Pearce, Proc. Geol. Soc. London, 4, 1843, p. 160.—Forbes, Mem. Geol. Surv. Great Britain, 2, pt. 2, 1848, p. 494.—Jaekel, Stammesg. Pelmat., Berlin, 1, 1899, p. 283, fig. 60 on p. 284; Zittel-Eastman Textb. Pal., 1, 1900, p. 187.—Schuchert, Smiths. Misc. Coll., 47, 1904, p. 226, pl. 37, figs. 11, 12.—Springer, Zittel-Eastman Textb. Pal., 2d ed., 1913, p. 153.
Pseudocrinus Haeckel, Amphorideen und Cystoideen, Leipzig, 1896, p. 135.—Bather, Treatise Zool., 3, Echinoderma, London, p. 62, fig. 29.

Pseudocrinites abnormalis Schuchert.
Pseudocrinites abnormalis Schuchert, Smiths. Misc. Coll., 47, 1904, p. 231, pl. 35, figs. 10–12; Maryland Geol. Surv., Low. Dev., 1913, p. 238, pl. 33, figs. 10–12.
Helderbergian (Keyser): Keyser, West Virginia.
Holotype.—Cat. No. 35068, U.S.N.M.

Pseudocrinites clarki Schuchert.
Pseudocrinites clarki Schuchert, Amer. Geol., 32, 1903, p. 233, pl. 36, figs. 4–7; pl. 39, fig. 14; Smiths. Misc. Coll., 47, pt. 2, 1904, pp. 233, 234, pl. 39, fig. 14; Maryland Geol. Surv., Low. Dev., 1913, p. 240, pl. 33, figs. 15–18; pl. 35, fig. 14.
Helderbergian (Keyser): Keyser, West Virginia.
Cotypes.—Cat. No. 35070, U.S.N.M.

Pseudocrinites claypolei Schuchert.
Pseudocrinites claypolei Schuchert, Smiths. Misc. Coll., 47, 1904, p. 232, pl. 37, fig. 1.
Helderbergian (Keyser): Clark's Mill, near New Bloomfield, Pennsylvania.
Holotype.—Cat. No. 35066, U.S.N.M.

Pseudocrinites elongatus Schuchert.
Pseudocrinites elongatus Schuchert, Smiths. Misc. Coll., 47, 1904, p. 235, pl. 35, figs. 6, 7; Maryland Geol. Surv., Low. Dev., 1913, p. 241, pl. 34, figs. 3, 4.
Helderbergian (Keyser): Pleasant Valley, west of Martin Mountain, Pennsylvania.
Holotype.—Cat. No. 35065, U.S.N.M.

Pseudocrinites gordoni Schuchert.
Pseudocrinites gordoni Schuchert, Amer. Geol., 32, 1903, p. 235; Smiths. Misc. Coll., 47, pt. 2, 1904, p. 229, fig. 29, pl. 36; figs. 8–12; pl. 39, figs. 11–13; Maryland Geol. Surv., Low. Dev., 1913, p. 236, pl. 33, figs. 5–9; pl. 35, figs. 11–13.
Helderbergian (Keyser): Keyser, West Virginia.
Holotype and *paratypes.*—Cat. No. 35071, U.S.N.M.

Pseudocrinites perdewi Schuchert.

Pseudocrinites perdewi Schuchert, Amer. Geol., 32, 1903, p. 238; Smiths. Misc. Coll., 47, 1904, p. 236, pl. 36, figs. 1-3; pl. 39, figs. 8-10; fig. 32; Maryland Geol. Surv., Low. Dev., 1913, p. 242, pl. 34, figs. 5-7; pl. 35, figs. 8-10.

Helderbergian (Keyser): Near Keyser, West Virginia.

Holotype and *paratype*.—Cat. No. 35072, U.S.N.M.

Pseudocrinites stellatus Schuchert.

Pseudocrinites stellatus Schuchert, Amer. Geol., 32, 1903, p. 236; Smiths. Misc. Coll., 47, 1904, p. 232, pl. 35, figs. 8, 9; pl. 39, fig. 7; Maryland Geol. Surv., Low. Dev., p. 239, 1913, pl. 33, figs. 13, 14; pl. 35, fig. 7.

Helderbergian (Keyser): Keyser, West Virginia.

Holotype.—Cat. No. 35069, U.S.N.M.

Pseudocrinites subquadratus Schuchert.

Pseudocrinites subquadratus Schuchert. Smiths. Misc. Coll., 47, 1904, p. 234, pl. 35, figs. 4, 5; Maryland Geol. Surv., Low. Dev. 1913, p. 237, pl. 34, figs. 1, 2.

Helderbergian (Keyser): Devil's Backbone, near Cumberland, Maryland.

Holotype.—Cat. No. 35067, U.S.N.M.

PSEUDOCRINUS Haeckel. See Pseudocrinites Pearce.

PSEUDOHORNERA Roemer. Genotype: Retepora diffusa Hall.

Drymotrypa Ulrich, Geol. Surv. Illinois, 8, 1890, p. 399.—Miller, N. A. Geol. Pal., 1st App., 1892, p. 684.—Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 235.—Grabau, Bull. New York State Mus., 45, 1901, p. 169; Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 169.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 141.

Thamnocella Simpson, 14th Ann. Rep. State Geol. New York for 1894, 1897, p. 525.

Pseudohornera Roemer, Leth. geog., Leth. Pal., 1, Atlas, 1876, expl. pl. 12, fig. 2.—Bassler, Bull. U. S. Geol. Surv., 292, 1906, p. 49; Bull. U. S. Nat. Mus., 77, 1911, p. 172.

Pseudohornera dichotoma (Ulrich).

Drymotrypa dichotoma Ulrich, Geol. Surv. Illinois, 8, 1890, p. 399, pl. 53, fig. 6.

Trenton: Montreal, Quebec.

Holotype.—Cat. No. 43388, U.S.N.M.

Pseudohornera diffusa (Hall).

Retepora diffusa Hall, Pal. New York, 2, 1852, p. 160, pl. 40C, figs. 1a-f.

Drymotrypa diffusa Ulrich, Geol. Surv. Illinois, 8, 1890, pl. 53, figs. 7-7b.—Grabau, Bull. New York State Mus., 45, 1901, p. 169, fig. 69; Bull. Buffalo Soc. Nat. Sci., 7, 1907, p. 169, fig. 69.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 142, fig. 197.

Pseudohornera diffusa Roemer, Leth. geog. Leth. Pal., 1, 1876, Atlas, pl. 12, fig. 2.—Bassler, Bull. U. S. Geol. Surv., 292, 1906, p. 50, pl. 23, figs. 6-9; pl. 18, figs. 1-3.

Clinton (Rochester): Lockport and Rochester, New York; Grimsby and Hamilton, Ontario.

Plesiotype.—Cat. N. 43389, U.S.N.M.

Pseudohornera niagarensis (Hall).

Fenestella n. sp. Hall, Pal. New York, 2, 1852, pl. 40D, fig. 4.

Thamniscus? Niagarensis Hall, 28th Ann. Rep. New York State Mus. (doc. ed.), 1876, pl. 11, figs. 22-25; ibid., mus. ed., 1879, p. 126, pl. 11, figs. 22-25; 11th Ann. Rep. Indiana Geol. Nat. Hist., 1882, p. 254, pl. 10, figs. 22-25.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1185, figs.—Simpson, 14th Ann. Rep. State Geol. New York for 1894, 1897, pl. 11, figs. 15-17.

Pseudohornera niagarensis—Continued.
Drymotrypa niagarensis Ulrich, Geol. Surv. Illinois, 8, 1890, p. 399.
Pseudohornera niagarensis Bassler, Bull. U. S. Geol. Surv., 292, 1906, p. 49, pl. 18, fig. 20; pl. 19, figs. 14–16.
Clinton—Niagaran: Lockport and Niagara Falls, New York; Hamilton, Ontario (Rochester); Waldron, Indiana; and Newsom, Tennessee (Waldron).

PSEUDOLINGULA Mickwitz. See Lingula subgenus Pseudolingula.

PSEUDONISCUS Nieszkowski. Genotype: P. aculeatus Nieszkowski.
Pseudoniscus Nieszkowski, Archiv. f. Naturk-Liv-Ehst. u. Kurl., 1, 1859, p. 381.—Schmidt, Mem. Acad. Imp. Sci. St. Petersburg, 7th ser., 31, No. 5, 1883, p. 34.—Zittel, Handb. Pal., 2, 1885, p. 642.—Packard, Mem. Nat. Acad. Sci., 3, pt. 2, 1886, p. 151.—Vogdes, Ann. New York Acad. Sci., 5, 1889, p. 2, pl. 1, fig. 5.—Clarke, 54th Rep. New York State Mus., 1901, pp. 84–88.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 403.—Clarke, Zittel-Eastman Textb. Pal., 1900, p. 673; 2d ed., 1913, p. 777.

Pseudoniscus roosevelti Clarke.
Pseudoniscus roosevelti Clarke, 54th Ann. Rep. New York State Mus., 1st App., 1902, pp. 87, 89, pl. 1, fig. 1; pl. 2, figs. 1–3.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 403, fig. 1703.
Cayugan: Near Pittsford, Monroe County (Pittsford), and Litchfield, New York (Bertie).

PSEUDOSPHÆREXOCHUS Schmidt.
Genotype: Sphærexochus hemicranium Kutorga.
Pseudosphærexochus Schmidt, Mem. Acad. Imp. Sci. St. Petersburg, 7th ser., 30, 1881, pp. 122, 124, 126, 130, 170.—Clarke, Geol. Minnesota, 3, pt. 2, 1894, pp. 737–8.—Reed, Geol. Mag., dec. 4, 3, 1896, p. 119.—Koken, Die Leitfossilien, Leipzig, 1896, p. 35, fig. 23; fig. 2.—Reed, Geol. Mag., dec. 4, 5, 1898, p. 210.—Raymond, Ann. Carnegie Mus., 1905, p. 375.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 320.—Raymond, Zittel-Eastman Textb. Pal., 1913, p. 725.

PSEUDOSPHÆREXOCHUS APOLLO Raymond. See Anacheirurus? apollo.

Pseudosphærexochus approximus Raymond.
Pseudosphærexochus approximus Raymond, Ann. Carnegie Mus., 3, 1905, p. 369, pl. 14, fig. 18; 7th Rep. Vermont State Geol., 1910, p. 242, pl. 36, fig. 18.
Chazyan (Crown Point): Sloop Bay, Valcour Island, New York.

Pseudosphærexochus canadensis (Billings).
Sphærexochus Canadensis Billings, Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 64, fig. 21.
Anticostian (Chicotte): Southwest Point, Anticosti.

Pseudosphærexochus chazyensis Raymond.
Pseudosphærexochus chazyensis Raymond, Ann. Carnegie Mus., 3, 1905, p. 370, pl. 14, figs. 19, 20; 7th Rep. Vermont State Geol., 1910, p. 243, pl. 36, figs. 19, 20.
Chazyan (Crown Point): Valcour Island and Chazy, New York.

Pseudosphærexochus? clintoni (Foerste).
Ceraurus ——— Foerste, Bull. Sci. Lab. Denison Univ., 2, 1887, p. 98, pl. 8, fig. 17.
Ceraurus (Pseudosphærexochus) clintoni Foerste, Geol. Surv. Ohio, 7, 1895, p. 527, pl. 27, fig. 17.
Upper Medinan (Brassfield): Brown's Quarry, near Dayton, Ohio.

Pseudosphærexochus? eryx (Billings).

Cheirurus Eryx Billings, Canadian Nat. Geol., 5, 1860, p. 322, fig. 30; Geol. Canada, Geol. Sur. Canada, 1863, p. 239, fig. 276 (fig. only); Pal. Foss., Geol. Surv. Canada, 1, 1865, p. 413, fig. 399.

Ozarkian? (Levis-erratics): Point Levis, Quebec.

Pseudosphærexochus mercurius (Billings).

Cheirurus Mercurius Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 285, fig. 272.

Ceraurus (Cyrtometopus) mercurius Clarke, Geol. Minnesota, 3, pt. 2, 1894, p. 736.

Pseudosphærexochus mercurius Raymond and Barton, Bull. Mus. Comp. Zool., 54, 1913, p. 542 (gen. ref.).

Chazyan (Quebec-P): Cow Head, Newfoundland.

PSEUDOSPHÆREXOCHUS (NIESZKOWSKIA) SATYRUS Raymond. See Nieszkowskia satyrus.

Pseudosphærexochus trentonensis Clarke.

Pseudosphærexochus trentonensis Clarke, Geol. Minnesota, 3, pt. 2, 1894, p. 734, figs. 53, 54.—Weller, Geol. Surv. New Jersey Pal., 3, 1903, p. 205, pl. 15, figs. 24, 25.

Ceraurus trentonensis Miller, N. A. Geol. Pal., 2d App., 1897, p. 787 (gen. ref.).

Trenton: Trenton Falls, New York; Jacksonburg, New Jersey.

Pseudosphærexochus vulcanus (Billings).

Cheirurus vulcanus Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 284, figs. 271a–c (not p. 324, fig. 310a–c=Nieszkowskia billingsi).

Pseudosphærexochus vulcanus Raymond, Ann. Carnegie Mus., 3, 1905, p. 367, pl. 14, fig. 16, fig. 10; 7th Rep. Vermont State Geol., 1910, p. 241, pl. 36, fig. 16.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 320, fig. 1634d.

Cheirurus prolificus Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 285, fig. 273, p. 325, figs. 311, 312.

Ceraurus (Pseudosphærexochus) prolificus Clarke, Geol. Minnesota, 3, pt. 2, 1894, p. 738 (gen. ref.).

Chazyan: Cow Head, Newfoundland (Quebec-P); Valcour Island, New York.

PSEUDOSPHÆREXOCHUS VULCANUS var. BILLINGSI Raymond. See Nieszkowskia billingsi.

PSILOCONCHA Ulrich. Genotype: P. grandis Ulrich.

Psiloconcha Ulrich, Geol. Surv. Ohio, 7, 1893, p. 665; Geol. Minnesota, 3, pt. 2, 1894, p. 530.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 386.

Psiloconcha elliptica Ulrich.

Psiloconcha elliptica Ulrich, Geol. Surv. Ohio, 7, 1893, p. 667, pl. 52, figs. 3, 4; Geol. Minnesota, 3, pt. 2, 1894, p. 530, fig. 42c–d.

Orthodesma ellipticum Miller, N. A. Geol. Pal., 2d App., 1897, p. 783 (gen. ref.).

Richmond (Waynesville): Clarksville, Ohio.

Cotypes.—Cat. No. 46281, U.S.N.M.

Psiloconcha grandis Ulrich.

Psiloconcha grandis Ulrich, Geol. Surv. Ohio, 7, 1893, p. 665, pl. 52, figs. 1, 2; Geol. Minnesota, 3, pt. 2, 1894, p. 530, fig. 42a–b.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 386, fig. 489d–e.

Orthodesma grande Miller, N. A. Geol. Pal., 2d App., 1897, p. 783 (gen. ref.).

Richmond (Waynesville): Waynesville, Ohio.

Holotype.—Cat. No. 46283, U.S.N.M.

Psiloconcha inornata Ulrich.
Psiloconcha inornata Ulrich, Geol. Surv. Ohio, 7, 1893, p. 667, pl. 52, figs. 11 and 12.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 387, fig. 491.
Maysville: Cincinnati, Ohio (Bellevue); St. Hilaire, Quebec (Pulaski).
Cotypes.—Cat. No. 46284, U.S.N.M.

Psiloconcha minima Ulrich.
Psiloconcha minima Ulrich, Geol. Surv. Ohio, 7, 1893, pl. 52, figs. 8, 9, p. 669.
Orthodesma minimum Miller, N. A. Geol. Pal., 2d App., 1897, p. 783 (gen. ref.).
Eden (Southgate): Covington, Kentucky.
Holotype.—Cat. No. 46285, U.S.N.M.

Psiloconcha minnesotensis Ulrich.
Psiloconcha minnesotensis Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 531, pl. 36, figs. 31 and 32.
Orthodesma minnesotense Miller, N. A. Geol. Pal., 2d App., 1897, p. 783 (gen. ref.).
Trenton (Prosser): Pleasant Grove, Minnesota.
Holotype.—Cat. No. 46286, U.S.N.M.

Psiloconcha senecta (Sardeson).
Modiolopsis senecta Sardeson, Bull. Minnesota Acad. Nat. Sci., 1893, 4, p. 73, pl. 2, fig. 17.
St. Peter: South St. Paul, Minnesota.

Psiloconcha sinuata Ulrich.
Psiloconcha sinuata Ulrich, Geol. Surv. Ohio, 7, 1893, p. 668, pl. 52, figs. 15 and 16.
Maysville (Bellevue): Cincinnati, Ohio.
Cotypes.—Cat. No. 46288, U.S.N.M.

Psiloconcha sinuata borealis Foerste.
Psiloconcha sinuata borealis Foerste, Bull. Sci. Lab. Denison Univ., 17, 1914, p. 296, pl. 2, figs. 9a–c.
Cincinnatian (Pulaski): Riviere des Hurons and Nicolet River, Quebec.

Psiloconcha subovalis (Ulrich).
Orthodesma subovale Ulrich, Jour. Cincinnati Soc. Nat. Hist., 2, 1879, p. 8, pl. 7, fig. 18.
Psiloconcha subovalis Ulrich, Geol. Surv. Ohio, 1893, p. 666, pl. 52, figs. 5–7.—Foerste, Bull. Sci. Lab. Denison Univ., 17, 1914, p. 295, pl. 2, fig. 15.
Maysville: Morrow, Ohio (Bellevue); Riviere des Hurons, Quebec (Pulaski).
Holotype and *plesiotypes.*—Cat. Nos. 46290, 46291, U.S.N.M.

Psiloconcha subrecta Ulrich.
Psiloconcha subrecta Ulrich, Geol. Surv. Ohio, 7, 1893, p. 667, pl. 52, figs. 13 and 14.
Richmond (Waynesville): Waynesville, Ohio.
Holotype.—Cat. No. 46289, U.S.N.M.

Psiloconcha tenuistriata Ulrich.
Psiloconcha tenuistriata Ulrich, Geol. Surv. Ohio, 7, 1893, p. 668, pl. 52, fig. 10.
Orthodesma tenuistriatum Miller, N. A. Geol. Pal., 2d App., 1897, p. 784 (gen. ref.).
Eden (Economy): Covington, Kentucky.
Holotype.—Cat. No. 46292, U.S.N.M.

PSILONYCHIA Ulrich. Genotype: P. perangulata Ulrich.
Psilonychia Ulrich, Geol. Surv. Ohio, 7, 1893, p. 648.

Psilonychia perangulata Ulrich.
Psilonychia perangulata Ulrich, Geol. Surv. Ohio, 7, 1893, p. 649, pl. 51, figs. 1-3.
Ambonychia perangulata Miller, N. A. Geol. Pal., 2d App., 1897, p. 779 (gen. ref.).
Maysville (Corryville): Cincinnati, Ohio.
Holotype.—Cat. No. 46287, U.S.N.M.

PSILOPHYTON GRACILLIMUS Lesquereux. See Mastigograptus gracillimus.

PTERASPIS ACADICA Matthew. See Cyathaspis acadica.

PTERINEA Goldfuss. Genotype: P. lævis Goldfuss.
Pterinea Goldfuss, Petrefacta Germaniae, 1826, p. 133; ibid., 2d ed., pt. 2, 1863, p. 126.—McCoy, Syn. Char. Carb. Fossils, 1844, p. 82.—Brown, Illust. Foss. Conch. Great Britain and Ireland, 1849, p. 164.—McCoy, British Pal. Rocks Foss., 1854, p. 258.—Woodward, Man. Mollusca, pt. 2, 1854, p. 262.—Pictet, Traite de Pal., 2d ed., 3, 1855, p. 595.—Meek, Amer. Jour. Sci. Arts, 2d ser., 37, 1864, p. 216.—Zittel, Handb. Pal., 2, 1881, p. 32.—Barrande, Syst. Sil. du Centre Boheme, 6, 1881, p. 26.—Hall, Pal. New York, 5, pt. 1, Lam. 1, 1884, p. 12; 35th Rep. New York State Mus. Nat. Hist., p. 406b; 1st Rep. State Geol. New York, 1884, p. 13.—Follmann, Verhandl. d. naturhist. Verein d. preuss Rhein, 1885, 42, p. 182.—Frech, Zeits. d. d. geol. Gesell., 40, 1888, p. 362.—Jackson, Mem. Boston Soc. Nat. Hist., 4, 1888, p. 386.—Miller, N. A. Geol. Pal., 1889, p. 505.—Jackson, Amer. Nat., 24, 1890, p. 1142.—Whidborne, Mon. Dev. Fauna South England, 2, Pal. Soc., 1892, p. 57.—Koken, Die Leitfossilien, Leipzig, 1896, p. 186, fig. 154.—Grabau, Bull. Buffalo Soc. Nat. Hist., 1899, p. 244.—Philipps, Zeits. d. d. geol. Gesell., 51, 1899, p. 181.—Dall, Zittel-Eastman Textb. Pal., 1, 1900, p. 367; 2d ed., 1913, p. 444.—Grabau, Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 207; Bull. New York State Mus., 45, 1901, p. 207.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 984.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 419.
Caritodens Foerste, Bull. Denison Univ., 16, 1910, p. 71 (Genotype: Pterinea demissa Conrad).

PTERINEA AVICULOIDEA Whitfield. See Pterinea lanii.

Pterinea bellilineata Billings.
Pterinea bellilineata Billings, Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 15.
Richmond (English Head, Charleton): White Cliff, Anticosti.
Plastotype.—Cat. No. 46293, U.S.N.M.

Pterinea bradti Grabau.
Pterinea bradti Grabau, Michigan Geol. Surv., Geol., 1st ser., 1909, p. 166, pl. 16, figs. 9, 10.
Pterinea subplana Clarke and Ruedemann, Mem. New York State Mus., 5, 1903 p. 49, pl. 5, fig. 4.
Upper Monroan (Lucas): Salt shaft, Detroit, Michigan.
Niagaran (Guelph): Shelby and Rochester, New York.

Pterinea brisa Hall.
Pterinea brisa Hall, 20th Rep. New York State Cab. Hist., 1868 (extras, 1865), p. 337, pl. 14 (5), fig. 1; p. 387; rev. ed., 1870, p, 384, pl. 14, fig. 1.—Winchell and Marcy, Mem. Boston Soc. Nat. Hist., 1, 1865, p. 108.—Hall, 28th Rep. New York State Mus. Nat Hist., doc. ed., 1875, pl. 27, figs. 7-9; ibid., mus. ed., 1879, p. 173, pl. 27, figs. 7-9.—Miller and Dyer, Cont. Pal., 1878, p. 10, pl. 3, fig. 7.—Hall, 11th Ann. Rep. Indiana Dep. Geol. Nat. Hist., 1882, p. 316, pl. 27, figs. 24, 25; pl. 28, figs. 7-9.—Chamberlin, Geol. Wisconsin, 1,

Pterinea brisa—Continued.
1883, p. 192, fig.—Foerste, Bull. Sci. Lab. Denison Univ., 1, 1885, p. 91, pl. 13, figs. 14a, b; ibid., 2, pt. 1, 1887, p. 104, pl. 8, fig. 30.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 808, figs.—Foerste, Geol. Surv. Ohio, Pal., 7, 1893, p. 557, pl. 25, figs. 14a, b; pl. 27, fig. 30; Bull. Sci. Lab. Denison Univ., 14, 1909, p. 65, pl. 4, fig. 61.
Clinton-Niagaran: Bridgeport, Illinois, and Racine, Wisconsin (Racine); Waldron, Indiana, and Newsom, Tennessee (Waldron); Ohio; etc.

PTERINEA CARINATA Goldfuss. See Byssonychia carinata.

Pterinea cincinnatiensis Miller and Faber.
Pterinea cincinnatiensis Miller and Faber, Jour. Cincinnati Soc. Nat. Hist., 17, 1894, p. 25, pl. 1, figs. 11–17.
Maysville (Fairmount): Cincinnati, Ohio.

Pterinea corrugata (James).
Avicula corrugata James, Cincinnati Quart. Jour. Sci., 1, 1874, p. 239.
Pterinea corrugata Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 1018.
Richmond: Wayne County, Indiana.

Pterinea curiosa Billings.
Pterinea curiosa Billings, Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 51, figs. 18a–18b on p. 52.
Anticostian (Jupiter River): Near Jupiter River, Anticosti.

Pterinea cyrtodontoidea Winchell and Marcy.
Pterinea cyrtodontoidea Winchell and Marcy, Mem. Boston Soc. Nat. Hist., 1, 1865, p. 95.
Niagaran (Racine): Chicago, Illinois.

Pterinea (Caritodens) demissa (Conrad).
Avicula demissa Conrad, Jour. Acad. Nat. Sci. Philadelphia, 8, 1842, p. 242, pl. 13, fig. 3.—Emmons, Geol. New York, 2, 1842, p. 404, fig. 2.—Owen, Amer. Jour. Sci. Arts, 47, 1844, pp. 376, 377, fig. 2.—Hall, Pal. New York, 1, 1847, p. 292, pl. 80, figs. 2a, b.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 175, pl. 17, fig. 10; Man. Geol., 1860, p. 102, fig. 2.—Billings, Geol. Canada, Geol. Surv. Canada, 1863, p. 215, fig. 220.—Miller, Cincinnati Quart. Jour. Sci., 1, 1874, p. 215.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 63, fig.
Pterinea demissa McCoy, British Pal. Rocks, Foss., 1854, p. 260, pl. 1, fig. 7.—Hall and Whitfield, Geol. Surv. Ohio, Pal., 2, 1875, p. 78, pl. 2, fig. 1.—Chamberlin, Geol. Wisconsin, 1, 1883, p. 174, fig.—Miller, N. A. Geol. Pal., 1889, p. 505, fig. 902.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 1018, pl. 48, fig. 1.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 419, fig. 545.
Pterinea (Caritodens) demissa Foerste, Bull. Sci. Lab. Denison Univ., 16, 1910, p. 71, pl. 1, fig. 10; Jour. Cincinnati Soc. Nat. Hist., 21, 1914, p. 134.
Caritodens demissa Foerste, Bull. Sci. Lab. Denison Univ., 17, 1914, p. 269, pl. 1, fig. 10; pl. 3, fig. 11.
Avicula subretroflexa D'Orbigny, Prodr. de Pal., 1, 1849, pl. 13.—Boule and Thevenin, Ann. de Pal., 1, fasc. 1, 1906, p. 4 (100), pl. 1, fig. 6.
Maysville and Richmond: Near Rome, New York (Pulaski); Cincinnati, Ohio, and vicinity; Indiana; Kentucky; Tennessee; Quebec; etc.

Pterinea elegans Savage.
Pterinea elegans Savage, Bull. Geol. Surv., Illinois, 23, 1913, p. 117, pl. 7, fig. 18.
Upper Medinan (Channahon): Will County, Illinois.

PTERINEA ELLIPTICA Miller. See Prolobella subelliptica.

Pterinea emacerata (Conrad).

Avicula emacerata Conrad, Jour. Acad. Nat. Sci. Philadelphia, 1842, p. 241, pl. 12, fig. 15.—Hall, Pal. New York, 2, 1852, p. 83, pl. 27, figs. 1a, b; p. 282, pl. 59, figs. 1a–e; Nat. Hist. New York, Geol., 4, 1843, p. 108, fig. 4; p. 109; tab. ill. 15, fig. 4.—Billings, Canadian Nat. Geol., 1, 1856, p. 60, pl. fig. 6.—Hall, 20th Rep. New York State Cab. Hist. (extras, 1865), 1868, p. 337; rev. ed., 1870, p. 384.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 68, figs.

Pterinea emacerata Grabau, Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 207, fig. 135; Bull. New York State Mus., 45, 1901, p. 207, fig. 135.—Weller, Geol. Surv. New Jersey, Pal., 3, 1903, p. 242, pl. 22, fig. 4.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 419, fig. 546.

Actinopteria emacerata Whitfield and Hovey, Bull. Amer. Mus. Nat. Hist., 11, pt. 2, 1899, p. 156 (gen. ref.).

Avicula leptonota Hall, Nat. Hist. New York, Geol., 4, 1843, p. 76, fig. 5; tab. ill. 8, fig. 5.—Owen, Amer. Jour. Sci. Arts, 48, 1845, p. 306, fig. 5.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 69, fig.

Clinton: Lockport, Rochester, Wolcott, etc., New York; Hamilton, etc., Ontario (Rochester); Nova Scotia.

?Helderbergian (Decker Ferry): Two miles south of Tristates, New York.

Pterinea formosa Savage.

Pterinea formosa Savage, Bull. Geol. Surv. Illinois, 23, 1913, p. 53, pl. 2, fig. 1.

Upper Medinan (Girardeau): Alexander County, Illinois.

Pterinea honeymani (Hall).

Avicula honeymani Hall, Canadian Nat. Geol., 5, 1860, p. 153, fig. 13.—Dawson, Acadian Geol., Suppl. Chap., 1860, p. 68, fig. 59; 2d ed., 1868, p. 604, fig. 210.

Pterinea honeymani Miller, N. A. Geol. Pal., 1889, p. 506 (gen. ref.).

Silurian (Arisaig): Arisaig, Nova Scotia.

Pterinea insueta (Emmons).

Avicula insueta Emmons, Geol. New York, 2, 1842, p. 399, fig. 5.—Hall, Pal. New York, 1, 1847, p. 291, pl. 80, figs. 1a, b.—Emmons, Amer. Geol., 1, pt. 2, 1855, p. 175, pl. 17, fig. 15.—Rogers, Geol. Pennsylvania, 2, pt. 2, 1858, p. 820, fig. 617.—Emmons, Man. Geol., 1860, p. 101, fig. 91.—Lincklaen, 14th Rep. New York State Cab. Nat. Hist., 1861, pl. 4, fig. 6.—Miller, Cincinnati Quart. Jour. Sci., 1, 1874, p. 216.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 69, figs.

Pterinea insueta Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 1019, pl. 48, fig. 2.

Utica(?): Canajoharie, New York.

?Maysville: Cincinnati, Ohio.

Pterinea lanii Grabau.

Pterinea aviculoidea Whitfield (not Hall), Geol. Rep. Wisconsin, 4, 1882, p. 322, pl. 25, figs. 6, 7; Ann. New York Acad. Sci., 5, 1891, p. 514, pl. 5, fig. 23; Geol. Ohio, 7, 1893, p. 415, pl. 1, fig. 23.—Sherzer, Michigan Geol. Surv., 7, pt. 1, 1900, p. 225, pl. 17, fig. 23.

Pterinea lanii Grabau, Michigan Geol. Surv., Geol., 1st ser., 1909, p. 164, pl. 20, fig. 13; pl. 30, figs. 23, 24.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 420, fig. 547.

Lower Monroan: Waubakee, Wisconsin; southeastern Michigan (Raisin River and Lucas).

Pterinea laxata Williams.
Pterinea laxata Williams, Proc. U. S. Nat. Mus., 42, 1912, p. 393, pl. 50, figs. 5 and 5a.
Silurian (Pembroke): Leighton Cove, Washington County, Maine.
Cotypes.—Cat. No. 58443, U.S.N.M.

PTERINEA MODIOLARIS Conrad. See Modiolopsis modiolaris.

Pterinea mucronata Ulrich.
Pterinea mucronata Ulrich, Jour. Cincinnati Soc. Nat. Hist., 2, 1879, p. 24, pl. 7, fig. 21.
Eden (Economy): Covington and Constance, Kentucky.
Holotype.—Cat. No. 46294, U.S.N.M.

PTERINEA (AMBONYCHIA) NEGLECTA McChesney. See Amphicœlia neglecta.

Pterinea nervata Foerste.
Pterinea nervata Foerste, Bull. Sci. Lab. Denison Univ., 14, 1909, p. 67, pl. 4, fig. 60.
Niagaran (Waldron): Newsom, Tennessee.

Pterinea newsomensis Foerste.
Pterinea newsomensis Foerste, Bull. Sci. Lab. Denison Univ., 14, 1909, p. 66, pl. 4, figs. 59a, b.
Niagaran (Waldron): Newsom, Tennessee.

Pterinea occidentalis Whiteaves.
Pterinea occidentalis Whiteaves, Geol. Surv. Canada, Pal. Foss., 3, pt. 4, 1906, p. 287, pl. 28, figs. 1-3.
Niagaran: Ami Island, near northeast shore of Lake Winnepegosis, Manitoba

PTERINEA ORBICULARIS Emmons. See Ambonychia orbicularis.

PTERINEA PARVULA Miller. See Palæopteria parvula.

PTERINEA PHOLADIS Conrad. See Cymatonota pholadis.

Pterinea prolifica Billings.
Pterinea prolifica Billings, Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 16.
Richmond (Charleton and English Head): Charleton Point, Anticosti.
Plastotype.—Cat. No. 46295, U.S.N.M.

PTERINEA REVOLUTA Winchell and Marcy. See Rhombopteria (Newsomella) revoluta.

Pterinea rugatula Miller and Faber.
Pterinea rugatula Miller and Faber, Jour. Cincinnati Soc. Nat. Hist., 17, 1894, p. 26, pl. 1, figs. 18, 19.
Maysville (Fairmount): Cincinnati, Ohio.

Pterinea securiformis (Hall).
Avicula securiformis Hall (not Hall, 1859), Pal. New York, 2, 1852, p. 331, pl. 75, fig. 4, 5a, b.
Pterinea securiformis Meek, Amer. Jour. Sci. Arts, 2d ser., 37, 1864, p. 216 (gen. ref.).—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 420, fig. 548.
Cayugan (Cobleskill and Rondout): Schoharie, etc., New York.

Pterinea striæcosta (McChesney).
Ambonychia striæcosta McChesney, Desc. New Fossils, 1861, p. 88.
Pterinea (Ambonychia) striæcosta McChesney, Plates Illust. N. Sp. Fossils, 1865, pl. 9, fig. 4.

Pterinea striæcosta—Continued.

Pterinea striæcosta Winchell and Marcy, Mem. Boston Soc. Nat. Hist., 1, 1865, p. 96.—McChesney, Trans. Chicago Acad. Sci., 1, 1868, p. 41, pl. 9, fig. 4.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 420, fig.

Niagaran (Racine): Bridgeport, etc., Illinois; Wisconsin.

Pterinea striata (Billings).

Modiolopsis striata Billings, Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 48.

Gamachian and Anticostian (Gun River, Jupiter River): Junction Cliff, etc., Anticosti.

PTERINEA STRIATULA Miller. See Prolobella striatula.

PTERINEA SUBPLANA Billings. See Leiopteria subplana.

PTERINEA SUBPLANA Clarke and Ruedemann. See Pterinea bradti.

Pterinea subquadrata James.

Pterinea subquadrata James, Paleontologist, No. 2, 1878, p. 13.

Richmond: Clinton County, Ohio.

Pterinea subrecta (Hall).

Avicula subrecta Hall, Pal. New York, 2, 1852, p. 331, pl. 75, fig. 3.

Aviculopecten subrectus Miller, N. A. Geol. Pal., 1889, p. 468 (gen. ref.).

Cayugan (Cobleskill): Schoharie, New York.

Pterinea subrugosa (D'Orbigny).

Avicula rugosa Vanuxem (not Münster, 1840), Nat. Hist. New York, Geol., 3, 1842, p. 112, fig. 2.—Hall, ibid., 4, 1843, p. 142, fig. 2; tab. ill. 26, fig. 2.—Mather, ibid., 1, 1843, p. 349, text fig. 2.—Owen, Amer. Jour. Sci. Arts, 2d ser., 1, 1846, p. 47, fig. 2.—Hall, Pal. New York, 3, 1859, p. 291, footnote.—Emmons, Man. Geol., 1860, p. 113, fig. 102.—Lincklaen, 14th Rep. New York State Cab. Nat. Hist., 1861, p. 58, pl. 9, fig. 2.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 69, fig.

Avicula subrugosa D'Orbigny, Prodr. de Pal., 1, 1849, p. 33.

Waterlime: New York.

Pterinea textilis (Hall).

Avicula textilis Hall, Pal. New York, 3, 1859, p. 288, pl. 52, figs. 9, 10?; pl. 53, figs. 2, 3, 5, 7, 10.

Pterinea textilis Billings, Pal. Foss., Geol. Surv. Canada, 2, pt. 1, 1874, pl. 4, fig. 1.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 811, fig.

Helderbergian (New Scotland and Manlius transition): Albany, Schoharie, and Herkimer Counties, New York.

Pterinea thebesensis Meek and Worthen.

Pterinea Thebesensis Meek and Worthen, Geol. Surv. Illinois, 3, 1868, p. 354, fig., pl. 6, fig. 3.—Savage, Bull. Geol. Surv. Illinois, 23, 1913, p. 93, pl. 5, fig. 28.

Upper Medinan (Edgewood): Near Thebes, Illinois; Edgewood and Louisiana, Missouri.

Pterinea thisbe Billings.

Pterinea Thisbe Billings, Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 52.

Anticostian (Gun River, Jupiter River): Challoupe River, Anticosti.

PTERINEA TRENTONENSIS Miller. See Prolobella trentonensis.

erinea (?Tolmaia) trescotti Williams.
Pterinea (?Tolmaia) trescotti Williams, Proc. U. S. Nat. Mus., 45, 1913, p. 334, pl. 29, figs. 14, 15.
Silurian (Edmunds): Crow Neck, northeast side of North Trescott, Eastport Quadrangle, Maine.
Cotypes.—Cat. No. 53955, U.S.N.M.

erinea undata (Hall).
Avicula undata Hall, Pal. New York, 2, 1852, p. 283, pl. 59, fig. 2; 20th Rep. New York State Cab. Nat. Hist., 1868, p. 389 (extras, 1865); rev. ed. (1870), p. 431.
Pterinea undata Clarke and Ruedemann, Mem. New York State Mus., 5, 1903, p. 50, pl. 5, fig. 6.
Niagaran: Rochester, New York (Rochester); Shelby, New York (Guelph).

ERINEA UNDATA Emmons. See Clionychia undata.

erinea varistriata Billings.
Pterinea varistriata Billings, Cat. Sil. Fossils Anticosti, Geol. Surv. Canada, 1866, p. 50.
Richmond (Charleton) and Gamachian (Ellis Bay): Gamache Bay, etc., Anticosti.

erinea volans Winchell and Marcy.
Pterinea volans Winchell and Marcy, Mem. Boston Soc. Nat. Hist., 1, 1865, pp. 95, 108.
Niagaran (Racine): Chicago, Illinois.

TERINOPECTEN Hall. Genotype: P. undosus Hall.
Pterinopecten Hall, Pal. New York, 5, pt. 1, Lam. (adv. copy), 1883, p. 3; ibid., Lam. 1, 1884, p. 12; 35th Rep. New York State Mus. Nat. Hist., 1884, p. 406b; 1st Rep. State Geol. New York, 1884, p. 13.—Miller, N. A. Geol. Pal., 1889, p. 507.—Jackson, Mem. Boston Soc. Nat. Hist., 5, 1890, p. 346.—Koken, Die Leitfossilien, Leipzig, 1896, p. 518.—Grabau, Bull. Buffalo Soc. Nat. Sci., 6, 1899, p. 243.—Hind, Mon. British Carb. Lam., 2, pt. 2, Pal. Soc., 1903, p. 51.

terinopecten? obscurus (Hall).
Avicula obscura Hall, Pal. New York, 3, 1859, p. 280, pl. 49, fig. 6.
Pterinopecten? obscurus Clarke and Ruedemann, Bull. New York State Mus., 65, 1903, p. 500 (gen. ref.).
Cayugan (Manlius): Schoharie County, New York.

terinopecten? rhomboideus (Hall).
Posidonomya? rhomboidea Hall, Pal. New York, 2, 1852, p. 284, pl. 59, fig. 5.
Pterinopecten? rhomboideum Whitfield and Hovey, Bull. Amer. Mus. Nat. Hist., 11, pt. 2, 1899, p. 162 (gen. ref.).
Clinton (Rochester): Lockport, New York.

TEROLICHAS Gurich. See Arctinurus Castelnau.

TERONITELLA Billings. Genotype: P. venusta Billings.
Pteronitella Billings, Pal. Foss., Geol. Surv. Canada, 2, pt. 1, 1874, p. 141; Canadian Nat., n. s., 7, 1874, p. 302.—Barrande, Acephales (Extraits Syst. Sil. Centre Boheme, 6), 1881, p. 47.—Bigot, Bull. Soc. Geol. France, 3d ser., 17, 1889, p. 792.—Miller, N. A. Geol. Pal., 1889, p. 507.

teronitella curta Billings.
Pteronitella curta Billings, Pal. Foss., Geol. Surv. Canada, 2, pt. 1, 1874, p. 143, pl. 9, fig. 6.—Dawson, Canadian Nat., n. s., 9, 1880, p. 343.
Silurian (Stonehouse): Arisaig, Nova Scotia.

Pteronitella oblonga Billings.

Pteronitella oblonga Billings, Pal. Foss., Geol. Surv. Canada, 2, pt. 1, 1874, p. 143, pl. 9, fig. 7.

Silurian: Arisaig, Nova Scotia.

Pteronitella venusta Billings.

Pteronitella venusta Billings, Pal. Foss., Geol. Surv. Canada, 2, pt. 1, 1874, p. 142, pl. 9, figs. 5, 5a.

Silurian (Stonehouse): Arisaig, Nova Scotia.

PTERONITES? SUBPLANA Weller. See Leiopteria subplana.

PTEROTHECA Salter. Genotype: P. transversa Salter.

Pterotheca Salter, Rep. British Assoc. Adv. Sci., 1852, p. 61.—Miller, N. A. Geol. Pal., 1889, p. 392.—Koken, Die Leitfossilien, Leipzig, 1896, p. 98.

Clioderma Hall, 14th Rep. New York State Cab. Hist., 1861, p. 96.

Pterotheca anatiniformis (Hall).

Tellinomya anatiniformis Hall, Pal. New York, 1, 1847, p. 154, pl. 34, fig. 7.

Clioderma anatiformis Hall, 14th Rep. New York State Cab. Nat. Hist., 1861, p. 98.

Lyonsia anatiniformis Emmons, Amer. Geology, 1, pt. 2, 1855, p. 170.

Pterotheca anatiniformis Miller, N. A. Geol. Pal., 1889, p. 393 (gen. ref.).

Trenton: Watertown, New York.

Pterotheca attenuata (Hall).

Clioderma attenuata Hall, 14th Rep. New York State Cab. Nat. Hist., 1861, p. 98.

Pterotheca attenuata Hall, Rep. Geol. Surv. Wisconsin, 1, 1862, p. 40, fig. 2.—Chamberlin, Geol. Wisconsin, 1, 1883, p. 158, fig.—Foerste, Bull. Sci. Lab. Denison Univ., 17, 1914, p. 312, pl. 11, fig. 3.

Black River: Wisconsin (Platteville); La Cloche Peninsula, Ontario (Lowville).

Pterotheca canaliculata (Hall).

Clioderma canaliculata Hall, 14th Rep. New York State Cab. Nat. Hist., 1861, p. 97.

Pterotheca canaliculata Miller, N. A. Geol. Pal., 1889, p. 392 (gen. ref.).

Trenton: Middleville, New York.

Pterotheca expansa (Emmons).

Delthyris expansus Emmons, Geol. New York, 2, 1842, p. 397, fig. 2, figs. 109-112.—Owen, Amer, Jour. Sci. Arts, 47, 1844, p. 368, fig. 2; Geol. Expl. Iowa, Wisconsin, Illinois, 2d ed., 1844, p. 84, pl. 17, fig. 14.

Clioderma expansa Hall, 14th Rep. New York State Cab. Nat. Hist., 1861, p. 98.

Pterotheca expansa Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 821, fig.—Raymond, Bull. Amer. Pal., 3, 1902, p. 306, pl. 19, fig. 12.—Weller, Geol. Surv. Pal. New Jersey, 3, 1903, p. 179, pl. 12, fig. 35.—Branson, Trans. Acad. Sci. St. Louis, 18, 1909, p. 45, pl. 7, fig. 14.

Black River: Watertown, New Poland, etc., New York; Dixon, Illinois; Lincoln County, Missouri.

?Trenton: Jacksonburg, New Jersey.

Pterotheca pentagona Foerste.

Pterotheca pentagona Foerste, Bull. Sci. Lab. Denison Univ., 17, 1914, p. 313, pl. 2, figs. 1, 2.

Cincinnatian (Pulaski): Near Chambly, etc., Quebec.

Pterotheca saffordi (Hall).

Clioderma saffordi Hall, 14th Rep. New York State Cab. Nat. Hist., 1861, p. 96, pl. 6, figs. 15–17.

rotheca saffordi—Continued.
Pterotheca (Clioderma) saffordi Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 821, figs.
Stones River (Lebanon): Lebanon, Tennessee.

erotheca transversa (?Salter) Billings.
Pterotheca transversa Salter, Rep. 22d Meeting British Assoc. Adv. Sci., Notes, Abstracts, 1853, p. 61.—Billings, Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, pp. 22, 57 (loc. ref.).
Richmond (English Head, Charleton): Gamache Bay, Anticosti.

terotheca undulata (Hall).
Clioderma undulata Hall, 14th Rep. New York State Cab. Nat. Hist., 1861, p. 97.
Pterotheca undulata Miller, N. A. Geol. Pal., 1889, p. 392 (gen ref.).
Trenton: Watertown, New York.

TERYGOMETOPUS Schmidt. Genotype: Calymene sclerops Dalman.
Pterygometopus Schmidt, Mem. l'Acad. Imp. Sci. St. Petersburg, 7th ser., 30, 1881, pp. 62, 67, 76.—Zittel, Handb. Pal., 2, 1885, p. 615.—Clarke, Geol. Minnesota, 3, pt. 2, 1894, p. 732.—Koken, Die Leitfossilien, Leipzig, 1896, p. 32, fig. 21, fig. 3.—Beecher, Zittel-Eastman Textb. Pal., 1, 1900, p. 636.—Reed, Geol. Mag., dec. 5, 2, 1905, pp. 226, 228.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 323.—Raymond, Zittel-Eastman Textb. Pal., 1913, p. 727.—Slocom, Field Mus. Nat. Hist., Geol. Ser., 4, 1913, p. 79.

terygometopus achates (Billings).
Dalmanites Achates Billings, Canadian Nat. Geol., 5, 1860, p. 63, fig. 9; Geol. Canada, Geol. Surv. Canada, 1863, p. 187, fig. 186.—Miller, N. A. Geol. Pal., 1889, p. 542, fig. 995.—Clarke, Geol. Minnesota, 3, pt. 2, 1894, p. 726, fig. 44.—Ruedemann, Bull. New York State Mus., 49, 1902, p. 68.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 325, fig. 1640.—Foerste, Jour. Cincinnati Soc. Nat. Hist., 21, 1914, p. 147, pl. 1, fig. 18.
Trenton: Ottawa, Ontario; New York; Kentucky; Minnesota.

terygometopus annulatus Raymond.
Pterygometopus annulatus Raymond, Annals Carnegie Mus., 3, 1905, p. 376, pl. 14, figs. 24, 25; 7th Rep. Vermont State Geol., 1910, p. 247, pl. 36, figs. 24, 25.
Chazyan (Day Point, Crown Point): Valcour Island, New York.

Pterygometopus callicephalus (Hall).
Phacops callicephalus Hall, Pal. New York, 1, 1847, p. 247, pl. 65, figs. 3a–i; Geol. Lake Sup. Land Dist., Foster and Whitney's Rep., 1851, p. 212, pl. 27, figs. 3a, b.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 214, pl. 15, figs. 3c–e, 7a–c.—Billings, Geol. Canada, Geol. Surv. Canada, 1863, p. 187, fig. 184.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 629, fig.
Dalmania callicephala Hall, 12th Rep. New York State Cab. Nat. Hist., 1859, p. 73 (gen. ref.).—Chamberlin, Geol. Wisconsin, 1, 1883, p. 160, fig.
Dalmanites callicephalus Billings, Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 27 (loc. ref.).—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 187, figs.—Miller, N. A. Geol. Pal., 1889, p. 542, fig. 996.—Cumings, 32d Ann. Rep. Dep. Geol. and Nat. Res. Indiana, 1908, pl. 54, figs. 12–12d.
Pterygometopus callicephalus Clarke, Geol. Minnesota, 3, pt. 2, 1894, p. 731, figs. 51, 52; p. 732.—Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 3, 1897, p. 235.—Ruedemann, Bull. New York State Mus., 49, 1902, p. 70.—Weller, Geol. Surv. New Jersey, Pal., 3, 1903, p. 206, pl. 15, figs. 29–32.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 324, fig. 1639c, d.
Trenton: Middleville, Watertown, etc., New York; Ontario; Manitoba; Kentucky; New Jersey; Minnesota; etc.

Pterygometopus carleyi (Meek).

Dalmanites Carleyi Meek, Amer. Jour. Sci., 3d ser., 3, 1872, p. 424; Geol. Surv. Ohio, Pal., 1, 1873, p. 170, pl. 14, figs. 2a–d.—Miller, Cincinnati Quart. Jour. Sci., 1, 1874, p. 142.

Maysville (Fairmount): Cincinnati, Ohio, and vicinity.

Pterygometopus carleyi rogersensis (Foerste).

Dalmanites carleyi-rogersensis Foerste, Bull. Sci. Lab. Denison Univ., 16, 1910, p. 85.

Trenton (Cynthiana): Bridge 54, west of Million Tunnel, Madison County, Kentucky.

Pterygometopus eboraceus Clarke.

Pterygometopus eboraceus Clarke, Geol. Minnesota, 3, pt. 2, 1894, p. 728, figs. 48, 49.—Ruedemann, Bull. New York State Mus., 49, 1902, p. 69, pl. 4, fig. 15.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 324, fig. 1639c.

Dalmanites eboraceus Miller, N. A. Geol. Pal., 2d App., 1897, p. 787 (gen. ref.).

Trenton: Rawlins Mills, New York.

Pterygometopus fredricki Slocom.

Pterygometopus fredricki Slocom, Field Mus. Nat. Hist., Geol. Ser., 4, 1913, p. 79, pl. 18, figs. 1–5.

Richmond (Maquoketa): Bloomfield, Iowa; Clermont and Postville Junction, Iowa.

Pterygometopus goodridgii (Schuchert).

Dalmanites (Pterygometopus) goodridgii Schuchert, Proc. U. S. Nat. Mus., 22, 1900, p. 174, pl. 12, figs. 5, 6.

Mohawkian: Head of Frobisher Bay, Baffin Land.

Cotypes.—Cat. No. 28170, U.S.N.M.

Pterygometopus intermedius (Walcott).

Dalmanites intermedius Walcott, 31st Rep. New York State Mus. Nat. Hist., 1880 (adv. sheets, 1877), p. 69.

Pterygometopus intermedius Clarke, Geol. Minnesota, 3, pt. 2, 1894, p. 727, figs. 45–47; p. 732.—Weller, Geol. Surv. New Jersey, Pal., 3, 1903, p. 208, pl. 15, fig. 33.—Branson, Trans. Acad. Sci. St. Louis, 18, 1909, p. 47, pl. 7, fig. 20.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 324, fig. 1639a, b.

Black River: Dunleith, Illinois; Clifton and Platteville, Wisconsin (Platteville); Lincoln County, Missouri (Auburn); Minnesota; New Jersey.

Plesiotype.—Cat. No. 41955, U.S.N.M.

Pterygometopus larrabeei Slocom.

Pterygometopus larrabeei Slocom, Field Mus. Nat. Hist., Geol. Ser., 4, 1913, p. 81, pl. 18, figs. 6–8.

Richmond (Maquoketa): Clermont, Elgin, and Bloomfield, Iowa.

Pterygometopus lincolnensis Branson.

Pterygometopus lincolnensis Branson, Trans. Acad. Sci. St. Louis, 18, 1909, p. 46, pl. 7, figs. 17–19.

Black River (Auburn—Decorah): Lincoln County, Missouri.

Pterygometopus meta (Hall).

Dalmania meta Hall, Rep. Geol. Surv. Wisconsin, 1862, p. 433.

Trenton (?Black River): Wisconsin.

rygometopus microps (Green).
Calymene microps Green, Mon. Trilobites North Amer., Philadelphia, 1832, p. 34.
Maysville(?): Near Ripley, Ohio.

erygometopus saltaensis Kayser.
Pterygometopus saltaensis Kayser, Zeits. d. d. Geol. Gesell., 50, 1898, p. 428, pl. 16, fig. 4.
Middle Ordovician: Salte, Argentina.

terygometopus schmidti Clarke.
Pterygometopus schmidti Clarke, Geol. Minnesota, 3, pt. 2, 1894, p. 729, fig. 50; p. 732.
Dalmanites schmidti Miller, N. A. Geol. Pal., 2d App., 1897, p. 787 (gen. ref.).
Black River (Platteville) and Trenton (Prosser): Minneapolis, Kenyon, and Cannon Falls, Minnesota.

terygometopus troosti (Safford).
Dalmanites troosti Safford, Geol. Tennessee, 1869, p. 290 (nom. nud.).—Clarke, Geol. Minnesota, 3, pt. 2, 1894, p. 732, footnote.
Chasmops Troosti Safford and Vogdes, Proc. Acad. Nat. Sci. Philadelphia, 1889, p. 167, fig.
Stones River: Murfreesboro, Tennessee.

TERYGOTUS Agassiz. Genotype: P. problematicus Agassiz.
Pterygotus Pictet, Traite de Pal., 2d ed., 2, 1854, p. 538.—Page, Rep. 25th Meeting British Assoc. Adv. Sci., Notes, Abstracts, 1856, p. 89.—Hall, Pal. New York, 3, 1859, pp. 416, 424, fig.—Woodward, Mon. British Foss. Crust., Palæontographical Soc., 1866, p. 33; Quart. Jour. Geol. Soc. London, 24, 1868, p. 294.—Barrande, Syst. Sil. du Centre Boheme, 1, Suppl., 1872, p. 556.—Alth, Abhandl. der K.-K. Geol. Reichsanstalt, 7, Heft 1, 1874, p. 53.—Schmidt, Mem. Acad. Imp. Sci. St. Petersburg, 7th ser., 31, No. 5, 1883, p. 64.—Zittel, Handb. Pal., 2, 1885, p. 652.—Miller, N. A. Geol. Pal., 1889, p. 564.—Vogdes, Annals New York Acad. Sci., 5, 1889, p. 31, 32, fig.—Laurie, Nat. Sci., 3, 1893, p. 124; Trans. Royal Soc. Edinburgh, 37, 1893, p. 515; Nat. Sci., 2, 1893, p. 124.—Grabau, Bull. New York State Mus., 45, 1901, p. 231.—Clarke, 54th Rep. New York State Mus., 1901, p. 83.—Grabau, Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 231.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 411.—Clarke and Ruedemann, Mem. New York State Mus., 14, 1912, p. 348.—Clarke, Zittel-Eastman Textb. Pal., 1900, p. 677; 2d ed., 1913, p. 784.

PTERYGOTUS ACUTICAUDATUS Pohlman. See Pterygotus buffaloensis.

PTERYGOTUS BILOBUS Pohlman. See Pterygotus buffaloensis.

Pterygotus buffaloensis Pohlman.
Pterygotus Buffaloensis Pohlman, Bull. Buffalo Soc. Nat. Sci., 4, 1881, p. 17, figs. 1–3; ibid., 5, p. 24, 1886, pl. 3, fig. 1.—Laurie, Trans. Royal Soc. Edinburgh, 37, pt. 2, 1893, pp. 515, 517.—Semper, Beitr. Pal. Geol. Oester.-Ung., 11, 1898, p. 74.—Clarke, Zittel-Eastman Textb. Pal., 1, pt. 2, 1900, p. 678, fig. 1425.—Seeman, Beitr. Pal. Geol. Oesterr.-Ung., Orients, 19, 1906, p. 51.—Clarke and Ruedemann, Mem. New York State Mus., 14, 1912, p. 358, pl. 57, fig. 3; pls. 67, 68, 72–80, figs. 72–78.
Pterygotus cummingsi Grote and Pitt, Bull. Buffalo Soc. Nat. Sci., 3, 1875, p. 18, fig. 1.

Pterygotus buffaloensis—Continued.

Pterygotus sp. (cummingsi?) Pohlman, ibid., 4, 1881, p. 18, fig. 4.
Pterygotus acuticaudatus Pohlman, ibid., 4, 1881, p. 42, pl. 2, fig. 3.
Pterygotus quadraticaudatus Pohlman, ibid., 4, 1881, p. 43, pl. 3, fig. 1.
Pterygotus? sp. Pohlman, ibid., 4, 1881, p. 44, pl. 3, fig. 2.
Pterygotus macrophthalmus? Pohlman, ibid., 4, 1881, p. 44.
Pterygotus bilobus Pohlman, ibid., 5, 1886, p. 27.
Cayugan (Bertie): Near Buffalo, New York.
Plesiotype.—Cat. No. 60053, U.S.N.M.

Pterygotus canadensis Dawson.

Pterygotus Canadensis Dawson, Canadian Nat., n. s., 9, 1879, p. 103, figs. 1, 2.
Niagaran dolomite: Hamilton, Ontario.

Pterygotus cobbi Hall.

Pterygotus cobbi Hall, Pal. New York, 3, 1859, p. 417, pl. 83B, fig. 4; pl. 84, fig. 8.—Grote and Pitt, Proc. Amer. Assoc. Adv. Sci., 26, 1878, p. 300, 301, fig. 1.—Grabau, Bull. New York State Mus., 45, 1901, p. 231; Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 231.—Semper, Beitr. Pal. Geol. Oestr.-Ung., Orients, 11, 1898, p. 80.—Clarke and Ruedemann, Mem. New York State Mus., 14, 1912, p. 371, pl. 77, fig. 6.
Pterygotus cummingsi Grote and Pitt, Proc. Amer. Assoc. Adv. Sci., 26, 1877, p. 300, 301, fig.
Cayugan (Bertie): Near Buffalo, New York.

Pterygotus cobbi juvenis Clarke and Ruedemann.

Pterygotus cobbi var. juvenis Clarke and Ruedemann, Mem. New York State Mus., 14, 1912, p. 429, figs. 119–121.
Cayugan (Bertie): Litchfield, Herkimer County, New York.

PTERYGOTUS CUMMINGSI Grote and Pitt. See Pterygotus buffaloensis and P. cobbi.

PTERYGOTUS GLOBICAUDATUS Pohlman. See Eurypterus pustulosus.

Pterygotus (Erettopterus) globiceps Clarke and Ruedemann.

Eurypterus maria (in part) Clarke, Bull. New York State Mus., 107, 1907, pl. 2, fig. 3.
Pterygotus (Erettopterus) globiceps Clarke and Ruedemann, Mem. New York State Mus., 14, 1912, p. 374, pl. 82, figs. 1–12.
Medinan (Shawangunk): Otisville, New York, and probably Delaware Water Gap, Pennsylvania.

Pterygotus (Erettopterus) grandis (Pohlman).

Ceratiocaris grandis Pohlman, Bull. Buffalo Soc. Nat. Sci., 4, 1881, p. 19, fig. 5.—Jones, Rep. 59th Meeting Brit. Assoc. Adv. Sci., 1890, p. 65.
Pterygotus (Erettopterus) grandis Clarke and Ruedemann, Mem. New York State Mus., 14, 1912, p. 379, pl. 81, fig. 80.
Cayugan (Bertie): Buffalo, New York.

PTERYGOTUS MACROPHTHALMUS? Pohlman. See Pterygotus buffaloensis.

Pterygotus macrophthalmus Hall.

Pterygotus macrophthalmus Hall, Pal. New York, 3, 1859, p. 418, pl. 80A, figs. 6, 8, 8a.—Grabau, Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 231; Bull. New York State Mus., 45, 1901, p. 231.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 411.—Clarke and Ruedemann, Mem. New York State Mus., 14, 1912, p. 350; pl. 69, figs. 2-7; pl. 70, figs. 1, 2; pl. 71.

ygotus macrophthalmus—Continued.
Pterygotus osborni Hall, Pal. New York, 3, 1859, p. 419, pl. 80A, fig. 9.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 822, fig.
ayugan (Bertie): Litchfield, Waterville, and near Buffalo, New York.

ygotus monroensis Sarle.
Pterygotus monroensis Sarle, Bull. New York State Mus., 69, 1903, p. 1102, pl. 24, figs. 7, 9.—Clarke and Ruedemann, Mem. New York State Mus., 14, 1912, p. 380, pl. 70, figs. 3–5.
?Pterygotus sp. Sarle, Bull. New York State Mus., 69, 1903, p. 1104, pl. 24, figs. 6, 8.
ayugan (Pittsford): Pittsford, Monroe County, New York.

ygotus (Eusarcus?) nasutus Clarke and Ruedemann.
Pterygotus (Eusarcus?) nasutus Clarke and Ruedemann, Mem. New York State Mus., 14, 1912, pp. 382, 416; pl. 86, figs. 6–10, figs. 102, 103.
Trenton (Schenectady): Schenectady, Aqueduct, and Duanesburg, New York.
hazyan (Normanskill): Catskill, New York.

ygotus normanskillensis Clarke and Ruedemann.
Pterygotus normanskillensis Clarke and Ruedemann, Mem. New York State Mus., 14, 1912, p. 416, fig. 104.
Chazyan (Normanskill): Catskill, New York.

YGOTUS OSBORNI Hall. See Pterygotus macrophthalmus.

YGOTUS OTISIUS Clarke. See Dolichopterus otisius.

ygotus prolificus Clarke and Ruedemann.
Pterygotus prolificus Clarke and Ruedemann, Mem. New York State Mus., 14, 1912, p. 382, pl. 86, figs. 1–5.
Trenton (Schenectady): Schenectady, Aqueduct, Duanesburg, etc., New York.

YGOTUS QUADRICAUDATUS Pohlman. See Pterygotus buffaloensis.

LODICTYA Lonsdale. Genotype: Flustra lanceolata Lonsdale.
Ptilodictya Lonsdale, Murchison's Sil. Syst., 1839, p. 676.—Portlock, Rep. Geol. Londonderry, 1843, p. 338.—McCoy, British Pal. Foss., 1852, p. 45.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 205.—Pictet, Traité de Pal., 2d ed., 4, 1857, p. 169.—Eichwald, Lethæa Rossica, 1, 1860, p. 387.—Nicholson, Geol. Mag., n. s., 1, 1874, p. 123; Pal. Province Ontario, 1874, p. 97.—Zittel, Handb. Pal., 1, 1880, p. 604.—Vine, Geol. Mag., dec. 2, 8, 1881, p. 474; Rep. British Assoc. Adv. Sci., 1881, p. 164; Quart. Jour. Geol. Soc. London, 38, 1882, p. 63.—Ulrich, Jour. Cincinnati Soc. Nat. Hist., 5, 1882, pp. 151, 162.—Vine, Rep. British Assoc. Adv. Sci., 1883, p. 203.—Foerste, Bull. Sci. Lab. Denison Univ., 2, 1887, p. 155.—Hall and Simpson, Pal. New York, 6, 1887, p. 19.—Miller, N. A. Geol. Pal., 1889, p. 318.—Nettelroth, Kentucky Fossil Shells, 1889, p. 30.—Ulrich, Geol. Surv. Illinois, 8, 1890, p. 390; Geol. Minnesota, 3, 1893, p. 163.—Pocta, Syst. Sil. Centre Boheme, 8, pt. 1, 1894, p. 21.—Ulrich, Zittel's Textb. Pal. (Engl. ed.), 1896, p. 279.—Simpson, 14th Ann. Rep. State Geol. New York for 1894, 1897, p. 541.—Grabau, Bull. Buffalo Soc. Nat. Sci., 6, 1899, p. 176.—Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 45.—Hennig, Archiv. für Zool., K. Sven. Vet. Akad. Stockholm, 2, No. 10, 1905, p. 16.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 155.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 754.—Bassler, Bull. U. S. Nat. Mus., 77, 1911, p. 113; Zittel-Eastman Textb. Pal., 1913, p. 344.

PTILODICTYA—Continued.
Escharopora (not Hall, 1847), Hall, 26th Ann. Rep. New York State Mus., 1874, p. 99; 32d Ann. Rep. New York State Mus., 1879, p. 161.
Heterodictya Nicholson, Geol. Mag., n. s., 2, 1875, p. 33; Pal. Province Ontario, 1875, p. 79.—Zittel, Handb. Pal., 1, 1880, p. 604.—Vine, Rep. 51st Meeting British Assoc. Adv. Sci., 1882, p. 166.—Miller, N. A. Geol. Pal., 1889, p. 309.

PTILODICTYA (part) of authors. See Escharopora Hall and Ptilotrypa Ulrich.

PTILODICTYA ACUMINATA James. See Escharopora acuminata.

PTILODICTYA ACUTA Nicholson. See Pachydictya acuta.

PTILODICTYA ALCYONE Billings. See Pachydictya crassa.

Ptilodictya angusta (Hall).
Escharopora (Ptilodictya) angusta Hall, Trans. Albany Inst., 10, 1883, p. 62 (abstract, 1879, p. 6); 11th Ann. Rep. Indiana Geol. Nat. Hist., 1882, p. 245.
Ptilodictya angusta Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 377.
Niagaran (Waldron): Waldron, Indiana.

PTILODICTYA ANTIQUA James. See Eurydictya multipora.

PTILODICTYA? ARCTIPORA Nicholson. See Bythopora arctipora.

PTILODICTYA ARGUTA Billings. See Pachydictya crassa.

PTILODICTYA BIPUNCTATA Lesley. See Phænopora expansa.

PTILODICTYA BRIAREUS Ulrich. See Escharopora briareus.

Ptilodictya canadensis Billings.
Ptilodictya canadensis Billings, Cat. Sil. Foss. Anticosti, 1866, p. 9.
Richmond (Charleton): Charleton Point, Anticosti.

PTILODICTYA? CINCINNATIENSIS James. See Arthropora cincinnatiensis.

PTILODICTYA CLEAVELANDI James. See Arthropora cleavelandi.

PTILODICTYA CLINTONENSIS James. See Ptilodictya nodosa.

PTILODICTYA CRASSA Nicholson and Hinde. See Pachydictya crassa.

PTILODICTYA CRUCIFORMIS D'Orbigny. See Escharopora falciformis.

PTILODICTYA DUBIA James. See Arthropora cleavelandi.

PTILODICTYA ELEGANTULA Emmons. See Stictopora elegantula.

PTILODICTYA EMACERATA Nicholson. See Dicranopora emacerata.

PTILODICTYA ENSIFORMIS Ulrich. See Phænopora ensiformis.

PTILODICTYA EXCELLENS Billings. See Phænopora excellens.

Ptilodictya expansa Hall.
Ptilodictya expansa Hall (part), 12th Ann. Rep. Indiana Geol. Nat. Hist., 1883, pl. 12, figs. 2, 3 (but not description on p. 266=Phænopora expansa Hall and Whitfield).—Foerste, Bull. Sci. Lab. Denison Univ., 2, 1887, p. 155; ibid., 3, 1888, pl. 15, fig. 5; Proc. Boston Soc. Nat. Hist., 24, 1889, p. 327.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 826, figs.—Ulrich, Geol. Surv. Illinois, 8, 1890, fig. 11e (p. 391).—Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 378.

Ptilodictya expansa—Continued.
Ptilodictya lanceolata var. americana Foerste, Geol. Surv. Ohio, 7, 1895, p. 598, pl. 36, figs. 3a–b.
Upper Medinan (Brassfield): Dayton and Todds Fork, Ohio: Cumberland Gap, Tennessee.
Plesiotype.—Cat. No. 43419, U.S.N.M. (Ulrich).

PTILODICTYA EXPANSA Hall (1883 part). See Phænopora expansa.

Ptilodictya expansa emarcescens Foerste.
Ptilodictya expansa var. emarcescens Foerste, Proc. Boston Soc. Nat. Hist., 24, 1889, p. 328, pl. 6, fig. 30.
Pachydictya emarcescens Foerste, Geol. Surv. Ohio, 7, 1895, p. 599, pl. 31, fig. 30.
Upper Medinan (Brassfield): Eaton, Ohio.
Observation.—Probably based on young examples of Ptilodictya expansa Hall.

Ptilodictya explicans Safford. Not recognized.
Ptilodictya explicans Safford, Geol. Tennessee, 1869, p. 286 (nom. nud).
Stones River: Central Tennessee.

PTILODICTYA FALCIFORMIS Nicholson. See Escharopora falciformis.

PTILODICTYA FAMELICUS Foerste. See Pachydictya? famelica.

PTILODICTYA FARCTUS Foerste. See Pachydictya crassa.

PTILODICTYA FENESTELLIFORMIS Nicholson. See Pachydictya fenestelliformis.

PTILODICTYA FIMBRIATA James. See Phænopora fimbriata.

Ptilodictya flagellum Nicholson.
Ptilodictya flagellum Nicholson, Ann. Mag. Nat. Hist., 4th ser., 15, 1875, p. 179, pl. 14, figs. 3–3b; Pal. Ohio, 2, 1875, p. 262, pl. 25, figs. 4–4b.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 827, figs.
Richmond: Near Lebanon, Ohio (Liberty); Island of Anticosti (Charleton).

PTILODICTYA FLEXUOSA James. See Stictoporella flexuosa.

PTILODICTYA FRAGILIS Billings. See Dicranopora fragilis.

Ptilodictya frondosa Weller.
Ptilodictya frondosa Weller, Geol. Surv. New Jersey Pal., 3, 1903, p. 224, pl. 19, figs. 1–4.
Helderbergian (Decker Ferry): Two miles south of Tristates, New York.

Ptilodictya gladiola Billings.
Ptilodictya gladiola Billings, Cat. Sil. Foss. Anticosti, 1866, p. 10.—Bassler, Bull. U. S. Nat. Mus., 77, 1911, pp. 114, 115, fig. 43.
Ptilodictya lanceolata Eichwald (not Goldfuss), Lethæa Ross., 1, 1860, p. 388.
Gamachian and Anticostian: West End Lighthouse, etc., Anticosti.
Silurian (Borkholm): Borkholm and Lyckholm, Esthonia, Russia.
Plesiotype.—Cat. No. 57210, U.S.N.M.

PTILODICTYA GRAHAMI James. See Arthropora cleavelandi.

PTILODICTYA GRANULOSA James. See Rhinidictya parallela.

PTILODICTYA HILLI James. See Escharopora hilli.

PTILODICTYA INTERNODIA Miller and Dyer. See Dicranopora internodia.

PTILODICTYA KENTUCKIENSIS James. See Arthropora kentuckiensis.

PTILODICTYA LABYRINTHICA Emmons. See Stictopora? labyrinthica.

PTILODICTYA LANCEOLATA Eichwald. See Ptilodictya gladiola.

PTILODICTYA LANCEOLATA var. AMERICANA Foerste. See Ptilodictya expansa.

PTILODICTYA LIBANA Safford. See Escharopora libana.

PTILODICTYA MACULATA Ulrich. See Escharopora maculata.

Ptilodictya magnifica Miller.
Ptilodictya magnifica Miller, Jour. Cincinnati Soc. Nat. Hist., 1, 1878, p. 100, pl. 3, figs. 1, 1a; N. A. Geol. Pal., 1889, fig. 503 (p. 318).—Ulrich, Geol. Surv. Illinois, 8, 1890, fig. 11a–c (p. 391).
Stenopora mammulata Billings, Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 7 (loc. ref.).
Richmond: Richmond, Indiana; Oxford, Ohio, etc. (Whitewater); Wilmington, Illinois; Maury County, etc., Tennessee (Fernvale); Island of Anticosti (English Head and Charleton).
Plesiotype.—Cat. No. 43420, U.S.N.M.

Ptilodictya multiramis Safford. Not recognized.
Ptilodictya multiramis Safford, Geol. Tennessee, 1869, p. 286.
Stones River (Lebanon): Central Tennessee.
Observation.—See note on Escharopora briareus Ulrich.

PTILODICTYA NITIDULA Billings. See Dicranopora nitidula.

Ptilodictya nodosa James.
Ptilodictya nodosa James, Paleontologist, No. 3, 1879, p. 20.—Ulrich, Jour. Cincinnati Soc. Nat. Hist., 4, 1882, pl. 7, figs. 2, 2a.—Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 380.—Bassler, Proc. U. S. Nat. Mus., 30, 1906, p. 50.
Ptilodictya clintonensis James, Paleontologist, No. 5, 1881, p. 38.
Ptilodictya teres James, Paleontologist, No. 5, 1881, p. 40.
Ptilodictya variabilis Ulrich, Geol. Surv. Illinois, 8, 1890, p. 304, fig. 2a, fig. 6a (p. 317).—Miller, N. A. Geol. Pal., 1889, figs. 505, 506 (p. 319).
Richmond (Liberty and Whitewater): Clinton and Warren Counties, Ohio; Indiana.
Plesiotype.—Cat. No. 43418, U.S.N.M.

Ptilodictya obliqua (Ringueberg).
Stictopora obliqua Ringueberg, Proc. Acad. Nat. Sci. Philadelphia, 1884, p. 146, pl. 2, figs. 2, 2a.
Ptilodictya obliqua Miller, N. A. Geol. Pal., 1889, p. 319.
Clinton: Lockport, New York.
Observation.—Defined and figured in such a manner that it is questionable whether it can be recognized.

PTILODICTYA PAVONIA D'Orbigny. See Escharopora pavonia.

PTILODICTYA PAVONIA Boule and Thevenin. See Peronopora decipiens.

PTILODICTYA PERELEGANS Ulrich. See Graptodictya perelegans.

Ptilodictya plumaria James.
Ptilodictya plumaria James, Paleontologist, No. 1, 1878, p. 4.—Ulrich, Jour. Cincinnati Soc. Nat. Hist., 5, 1882, pl. 7, figs. 1, 1a.—Bassler, Proc. U. S. Nat. Mus., 30, 1906, p. 51.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 874, pl. 24, fig. 1; pl. 32, fig. 6.
Richmond (Whitewater): Waynesville and Oxford, Ohio.

PTILODICTYA PONDEROSA Ulrich. See Escharopora ponderosa.

PTILODICTYA? PUNCTATA Nicholson and Hinde. See Phænopora punctata.

PTILODICTYA RAMOSA Emmons. See Stictopora? ramosa.

PTILODICTYA RAMOSA Ulrich. See Escharopora ramosa.

PTILODICTYA RARIPORA Nicholson. See Nematopora raripora.

PTILODICTYA RECTA Emmons. See Escharopora recta.

PTILODICTYA RUDIS Foerste. See Pachydictya crassa.

PTILODICTYA RUSTICA Billings. See Pachydictya crassa.

PTILODICTYA SHAFFERI Nicholson. See Arthropora shafferi.

PTILODICTYA SUBRECTA Ulrich. See Escharopora subrecta.

Ptilodictya sulcata Billings.
Ptilodictya sulcata Billings, Cat. Sil. Foss. Anticosti, 1866, p. 35.
Anticostian (Jupiter River): The Jumpers, etc., Anticosti.

PTILODICTYA SUPERBA Billings. See Phænopora superba.

Ptilodictya symmetra Safford. Not recognized.
Ptilodictya symmetra Safford, Geol. Tennessee, 1869, p. 286 (nom. nud.).
Stones River: Central Tennessee.

Ptilodictya tenella Ulrich and Bassler.
Ptilodictya tenella Ulrich and Bassler, Maryland Geol. Surv., Low. Dev., 1913, p. 288, pl. 42, fig. 10; pl. 48, figs. 7, 8.
Helderbergian (Keyser): Cumberland, Maryland.
Cotypes.—Cat. No. 60744, U.S.N.M.

PTILODICTYA TENERA Billings. See Pachydictya crassa.

PTILODICTYA TERES James. See Ptilodictya nodosa.

PTILODICTYA VARIABILIS Ulrich. See Ptilodictya nodosa.

PTILODICTYA WELSHI James. See Phænopora multifida.

Ptilodictya whiteavesi Ulrich.
Ptilodictya Whiteavesii Ulrich, Contr. Micro-Pal. Cambro-Sil., pt. 2, 1889, p. 44, pl. 8, figs. 1-1e.—Whiteaves, Pal. Foss., 3, 1895, p. 118.
Richmond: Stony Mountain, Manitoba (Stony Mountain); Island of Anticosti (Charleton).
Figured sections of *cotypes.*—Cat. No. 43476, U.S.N.M.

Ptilodictya whitfieldi Foerste.
Ptilodictya Whitfieldi Foerste, Geol. Surv. Ohio, 7, 1895, p. 598, pl. 36, fig. 4; pl. 28, fig. 5.
Upper Medinan (Brassfield): Todds Fork, Clinton County, Ohio.

PTILOGRAPSUS Nicholson. See Ptilograptus Hall.

PTILOGRAPTUS Hall. Genotype: P. plumosus Hall.

Ptilograptus Hall, Geol. Surv. Canada, Can. Org. Rem., dec. 2, 1865, p. 139; 20th Rep. New York State Cab. Hist., 1868, p. 218; rev. ed., p. 252.—Zittel, Handb. Pal., 1, 1879, p. 289.—Spencer, Bull. Mus. Univ. State Missouri, 1, 1884, p. 41; Trans. Acad. Sci. St. Louis, 4, 1884, pp. 563, 591.—Miller, N. A. Geol. Pal., 1889, p. 201.—Pocta, Syst. Sil. Centre Boheme, 8, pt. 1, 1894, p. 201.—Wiman, Nat. Sci., 9, 1896, p. 246.—Roemer and Frech, Leth. geog., 1 Theil, Leth. Pal., 1, 3 Lief., 1897, p. 579.—Ruedemann, Mem. New York State Mus., 7, pt. 1, pp. 587, 588.—Grabau and Shimer, N. A. Index Fossils, 1, 1906, p. 27.—Ruedemann, Mem. New York State Mus., 11, pt. 2, 1906, pp. 147, 148, 175, 176; Zittel-Eastman Textb. Pal., 2d ed., 1913, p. 128.

Ptilograpsus Nicholson, Ann. Mag. Nat. Hist., 4th ser., 1, 1868, p. 239; Mon. British Grapt., 1872, p. 126.

Ptilograptus foliaceus Spencer.

Ptylograpsus foliaceus Spencer, Canadian Nat., n. s., 7, 1878, pp. 458, 462.

Ptilograptus foliaceus Spencer, Bull. Mus. Univ. State Missouri, 1, 1884, pp. 15, 41, pl. 6, figs. 7, 7a; Trans. Acad. Sci. St. Louis, 4, 1884, p. 591, pl. 6, fig. 7.—Miller, N. A. Geol. Pal., p. 201, fig. 210.—Gurley, Jour. Geol., 4, 1896, pp. 100, 309.—Bassler, Bull. U. S. Nat. Mus., 65, 1909, pp. 16, 17, fig. 18.

Niagaran dolomite: Hamilton, Ontario.

Ptilograptus geinitzianus Hall.

Ptilograptus geinitzianus Hall, Geol. Surv. Canada, Can. Org. Rem., dec. 2, 1865, p. 140, pl. 21, figs. 5–8; 20th Rep. New York State Cab. Nat. Hist., 1868, pl. 4, figs. 17, 18; rev. ed., 1870, pl. 4, figs. 17, 18, p. 225.—Gurley, Jour. Geol., 4, 1896, p. 300.—Roemer and Frech, Leth. Pal., 1, 1897, p. 580.—Ruedemann, Mem. New York State Mus., 7, pt. 1, 1904, p. 590, pl. 4, fig. 16.

Canadian: Point Levis, Quebec (Levis, Didymograptus zone); Deepkill, Rensselaer County, New York (Deepkill).

Ptilograptus hartnageli Ruedemann.

Ptilograptus hartnageli Ruedemann, Mem. New York State Mus., 11, pt. 2, 1908, p. 149, pl. 1, fig. 9; text fig. 54.

Clinton: Sterling Station, Cayuga County, New York.

Ptilograptus plumosus Hall.

Ptilograptus plumosus Hall, Geol. Surv. Canada, Can. Org. Rem., dec. 2, 1865, p. 140, pl. 21, figs. 1, 2, 3, 4.—Billings, Geol. Surv. of Canada, Pal. Fossils, 1, 366, 375.—Hall, New York State Cab. Nat. Hist., 20th Ann. Rep., 1868, pl. 4, fig. 16.—Ami, Geol. Surv. of Canada, Rep. 1889, 2d ser., 3, pt. 2, p. 117k.—Gurley, Jour. Geol., 4, 1896, 300.—Roemer and Frech, Leth. geog., 1 Theil, Leth. Pal., 1, 1897, p. 579, fig. 151; p. 564, fig. 137.—Ruedemann, New York State Pal., Ann Rep., 1902, p. 570; Mem. New York State Mus., 7, pt. 1, 1904, pp. 588–589, pl. 4, figs. 14, 15.—Grabau and Shimer, N. A. Index Fossils, 1, 1906, p. 27, fig. 38.

Ptilograpsus plumosus Nicholson, Mon. British Grapt., 1872, p. 126, fig. 66.

Canadian: Point Levis, Quebec (Levis, Didymograptus zone); Deepkill and Mount Moreno, near Hudson, New York (Deepkill, Diplograptus dentatus zone); Cowhead, Newfoundland.

Ptilograptus poctai Ruedemann.

Ptilograptus poctai Ruedemann, Mem. New York State Mus., 11, pt. 2, 1908, pp. 148, 149, pl. 1, fig. 8, fig. 53.

Chazyan (Normanskill): Glenmont, Albany County, New York.

lograptus tenuissimus Ruedemann.

Ptilograptus tenuissimus Ruedemann, Mem. New York State Mus., 7, pt. 1, 1904, p. 591, pl. 4, fig. 13.

Canadian (Deepkill, Didymograptus bifidus zone): Deepkill, Rensselaer County, New York.

TILOPORELLA Hall. Genotype: Fenestella (Ptiloporella) laticrescens Hall.

Ptyloporella Hall, Rep. State Geol. New York for 1884, 1885, p. 36.

Ptiloporella Hall and Simpson, Pal. New York, 6, 1887, p. xxiv.—Miller, N. A. Geol. Pal., 1889, p. 319.—Simpson, 13th Ann. Rep. State Geol. New York for 1893, 1895, pp. 690, 704, 725; 47th Ann. Rep. New York State Mus., pp. 884, 898, 919 (on p. 704, p. 898 of Mus. Rep., Simpson has inadvertently interchanged the terms Ptiloporella and Ptiloporina); 14th Ann Rep. State Geol. New York for 1894, 1897, pp. 506, 521.—Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, pp. 40, 383.—Bassler, Bull. U. S. Geol. Surv., 292, 1906, p. 51.

Pinnaporina Simpson, 13th Ann. Rep. State Geol. New York for 1893, 1895, p. 705 (not p. 725=Ptiloporina); 47th Ann. Rep. New York State Mus., p. 899 (not p. 919).

Pinnaporella Simpson, 14th Ann. Rep. State Geol. New York for 1894, 1897, pp. 507, 521.

iloporella nervata (Nicholson).

Fenestella nervata Nicholson, Pal. Ohio, 2, 1875, p. 264, pl. 25, figs. 11, 11a.

Ptiloporella nervata Miller, N. A. Geol. Pal., 1889, p. 319.—Bassler, Bull. U. S. Geol. Surv., 292, 1906, p. 51, pl. 24, figs. 24, 25; pl. 26, figs. 5, 6.

Niagaran: Cedarville, Ohio; Lockport, New York; Grimsby, Thorold, and Hamilton, Ontario (Rochester); Osgood, Indiana (Osgood).

Plesiotypes.—Cat. No. 35743, U.S.N.M.

TILOTRYPA Ulrich. Genotype: P. obliquata Ulrich.

Ptiliotrypa Ulrich, Geol. Surv. Illinois, 8, 1890, p. 393.—(Ulrich, in press) Miller, N. A. Geol. Pal., 1889, p. 320.—Simpson, 14th Ann. Rep. State Geol. New York for 1894, 1897, p. 542.—Pocta, Syst. Sil. Centre Boheme, 8, pt. 1, 1894, p. 17.—Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 46.

tilotrypa obliquata Ulrich.

Ptilotrypa obliquata Ulrich, Geol. Surv. Illinois, 8, 1890, p. 531, pl. 30, figs. 1-1e.—Simpson, 14th Ann. Rep. State. Geol. New York for 1894, 1897, figs. 100-103 (p. 542).

Richmond (Fernvale): Wilmington, Illinois; Tennessee.

Cotypes.—Cat. No. 43787, U.S.N.M.

TYCHASPIS Hall. Genotype: Dikelocephalus miniscaensis Owen.

Ptychaspis Hall, 16th Ann. Rep. New York State Cab. Nat. Hist., 1863, p. 170.—Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 198.—Hall, Trans. Albany Inst., 5, 1867, p. 160.—Zittel, Handb. Pal., 2, 1885, p. 602.—Miller, N. A. Geol. Pal., 1889, p. 564.

PTYCHASPIS CYLINDRICUS Billings. See Arionellus cylindricus.

Ptychaspis? pauper (Billings).

Dikelocephalus pauper Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 200.

Dicellocephalus pauper Matthew, Trans. Royal Soc. Canada, 10, sec. 4, 1893, p. 11, footnote.

Ptychaspis? pauper Walcott, Smiths. Misc. Coll., 57, No. 13, 1914, p. 352 (gen. ref.).

Ozarkian? (Levis—erratics): Point Levis, Quebec.

Ptychaspis? selectus (Billings).

Dikelocephalus selectus Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 199.

Ptychaspis? selectus Walcott, Smiths. Misc. Coll., 57, No. 13, 1914, p. 352 (gen. ref.).

Ozarkian? (Levis—erratics): Point Levis, Quebec.

Ptychaspis sesostris (Billings).

Dikelocephalus Sesostris Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 198, fig. 184.

Ptychaspis sesostris Miller, N. A. Geol. Pal., 1889, p. 564, fig. 1052.

Dicellocephalus Sesostris Matthew, Trans. Royal Soc. Canada, 1893, p. 11, footnote.

Ozarkian? (Levis—erratics): Point Levis, Quebec.

Ptychaspis speciosus Walcott.

Ptychaspis speciosus Walcott, 32d Rep. New York State Mus. Nat. Hist., 1879, p. 131.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 830.—Walcott, Smiths. Misc. Coll., 57, 1912, p. 272, pl. 43, figs. 16–19.

Ozarkian or Upper Cambrian (Hoyt): Near Saratoga Springs, New York.

Cotypes.—Cat. Nos. 58563–58565, U.S.N.M.

PTYCHASPIS SUBCLAVATUS Billings. See Arionellus subclavatus.

PTYCHOCRINUS Wachsmuth and Springer.

Genotype: Gaurocrinus splendens Miller.

Ptychocrinus Wachsmuth and Springer, Proc. Acad. Nat. Sci. Philadelphia, 1885, p. 321 (Rev. Pal., pt. 3, sec. 1, p. 99).—James, Jour. Cincinnati Soc. Nat. Hist., 19, 1897, p. 109.—Wachsmuth and Springer, Mem. Mus. Comp. Zool., Harvard, 20, 1897, p. 197.—Bather, Geol. Mag., dec. 4, 6, 1899, p. 124; Treatise on Zool., pt. 3, Echinoderma, London, 1900, p. 198.—Wachsmuth, Zittel-Eastman Textb. Pal., 1, 1900, p. 145.—Zittel, Grundzuge Pal., 1, 1910, p. 161.—Springer, Zittel-Eastman Textb. Pal., 2d ed., 1913, p. 187.

PTYCHOCRINUS ANGULARIS Wachsmuth and Springer. See Ptychocrinus parvus.

Ptychocrinus parvus (Hall).

Glyptocrinus parvus Hall, 20th Rep. New York State Cab. Nat. Hist., 1867, p. 304 (nom. nud.); 24th Rep. New York State Cab. Nat. Hist., 1872, p. 207, pl. 5, fig. 17 (separate, 1871, pl. 1, fig. 17).—Meek, Geol. Surv. Ohio, Pal., 1, 1873, p. 36, pl. 2, fig. 4a, b.—Miller, Jour. Cincinnati Soc. Nat. Hist., 6, 1883, p. 224.

Ptychocrinus parvus Wachsmuth and Springer, Proc. Acad. Nat. Sci., Philadelphia, 1885, p. 322 (Rev. Pal., pt. 3, sec. 1, p. 100).—James, Jour. Cincinnati Soc. Nat. Hist., 19, 1897, p. 110.—Wachsmuth and Springer, Mem. Mus. Comp. Zool., Harvard, 1897, p. 199, pl. 18, figs. 1, 2.

Glyptocrinus angularis Miller and Dyer, Jour. Cincinnati Soc. Nat. Hist., 1, 1878, p. 28, pl. 1, fig. 10.

Gaurocrinus angularis Miller, Jour. Cincinnati Soc. Nat. Hist., 6, 1883, p. 229.

?Glyptaster (Eucrinus) angularis Wachsmuth and Springer, Amer. Jour. Sci., 25, 1883, p. 265.

Ptychocrinus angularis Wachsmuth and Springer, Proc. Acad. Nat. Sci. Philadelphia, 1885, p. 323 (Rev. Pal., pt. 2, p. 100).—James, Jour. Cincinnati Soc. Nat. Hist., 19, 1897, p. 109.

Reteocrinus gracilis Wetherby, Jour. Cincinnati Soc. Nat. Hist., 4, 1881, p. 83, pl. 2, figs. 2a, 2.—Carpenter, Phil. Trans. Roy. Soc. London, 174, 188 p. 927.—James, Jour. Cincinnati Soc. Nat. Hist., 19, 1897, p. 103.

Maysville (Fairmount): Cincinnati, Ohio, and vicinity.

Plesiotype.—Cat. No. 40774, U.S.N.M. (Holotype of R. gracilis.)

PTYCHOCRINUS PRISCUS Wachsmuth and Springer. See Periglyptocrinus priscus.

Ptychocrinus splendens (Miller).
Gaurocrinus splendens Miller, Jour. Cincinnati Soc. Nat. Hist., 6, 1883, p. 230, pl. 2, fig. 3, 3a.
Ptychocrinus splendens Wachsmuth and Springer, Proc. Acad. Nat. Sci. Philadelphia, 1885, p. 323 (Rev. Pal., pt. 3, sec. 1, p. 101).—Keyes, Missouri Geol. Surv., 4, 1894, p. 162, pl. 22, fig. 1.—Wachsmuth and Springer, Mem. Mus. Comp. Zool. Harvard, 20, 1897, p. 198, pl. 18, fig. 3a, b.—Savage, Bull. Geol. Surv. Illinois, 23, 1913, p. 39, pl. 1, fig. 1.
Upper Medinan (Girardeau): Cape Girardeau, Missouri; Thebes. Illinois.

PTYCHONEMA Hall and Simpson. See Monotrypa Nicholson.

PTYCHOPARIA Corda. Genotype: Conocephalus striatus Emmrich.
Ptychoparia Corda, Abh. d. k. bohmischen Gesell., d. Wiss., 5 (extract), 1847, p. 25, pl. 2, fig. 11.—Walcott, Bull. U. S. Geol. Surv., 10, 1884, p. 34; ibid., 30, 1886, p. 193.—Matthew, Canadian Rec. Sci., 2, 1887, p. 357; Trans. Roy. Soc. Canada, 5, sec. 4, 1888, pp. 134, 142.—Miller, N. A. Geol. Pal., 1889, p. 564.—Œhlert, Bull. Soc. Geol. de France, 3d ser., 33, 1895, p. 319, footnote; 34, 1896, p. 111.—Beecher, Amer. Geol., 16, 1895, p. 178.—Pompeckj, Jahrb. d. k.-k. geol. Reichsanstalt, 45, 1896, p. 539.—Beecher, Amer. Jour. Sci., 4th ser., 3, 1897, pp. 104, 184, 187, 188, pl. 3, fig. 16.—Frech, Leth. geog., Leth. Pal., 2, 1897, p. 26, footnote.—Toll, Mem. l'Acad. Imp. Sci. St. Petersburg, 7th ser., 8, No. 10, 1899, p. 21.—Beecher, Zittel-Eastman Textb. Pal., 1, 1900, p. 628.—Lindström, Kongl. Sven. Vet.-Akad. Handl., 34, No. 8, 1901, p. 22.—Jaekel, Zeits. d. d. geol. Gesell., 53, 1901, p. 133; ibid., 54, Brief. Mitth., 1902, p. 53.—Beecher, Amer. Jour. Sci., 4th ser., 13, 1902, p. 166.—Gronwall, Danmarks Geol. Unders., 2, Raekke, No. 13, 1902, p. 148.—Lorenz, Zeitsch. deutsch. geol. Gesell., 58, pt. 2, 1906, p. 57.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 275.—Raymond, Zittel-Eastman Textb. Pal., 1913, p. 715.—Walcott, Cambrian Faunas China, Carnegie Inst., 3, 1913, p. 130.

Ptychoparia affinis (Walcott).
Ptychoparia (Euloma?) affinis Walcott, Mon. U. S. Geol. Surv., 8, 1884, p. 54, pl. 10, fig. 12; 32, pt. 2, 1899, p. 457, pl. 65, fig. 8.
Cambrian and ?Lowest Ordovician: Eureka District, Nevada.

Ptychoparia? annectans Walcott.
Ptychoparia? annectans Walcott, Mon. U. S. Geol. Surv., 8, 1884, p. 91, pl. 12, fig. 18.
Lower Pogonip: Ridge east of Hamburg Ridge, Eureka District, Nevada.
Cotype.—Cat. No. 24571, U.S.N.M.

Ptychoparia blairi Weller.
Ptychaparia blairi Weller, Geol. Surv. New Jersey Pal., 3, 1903, p. 117, pl. 1, fig. 10.
Upper Cambrian or Ozarkian (Kittatinny): Blairstown, New Jersey.

PTYCHOPARIA CALCIFERA Walcott. See Lonchocephalus calciferus.

PTYCHOPARIA CONICA? Keyes. See Bathyurus conicus.

Ptychoparia? devinei (Billings).
Dikelocephalus Devinei Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 195, figs. 180–181.
Conocephalites Devinei Matthew, Trans. Roy. Soc. Canada, 10, sec. 4, 1893, p. 11, footnote.

Ptychoparia? devinei—Continued.

Ptychoparia? devinei Walcott, Smiths. Misc. Coll., 57, No. 13, 1914, p. 350 (gen. ref.).

Ozarkian? (Levis-erratics): Point Levis, Quebec.

Ptychoparia granulosa (Hall and Whitfield).

Crepicephalus (Loganellus) granulosus Hall and Whitfield, U. S. Geol. Expl. 40th Parl., 4, 1877, p. 214, pl. 2, figs. 2, 3.

Ptychoparia granulosus Walcott, Mon. U. S. Geol. Surv., 8, 1884, p. 57.

Cambrian and ? Ordovician (Pogonip): Eureka District, Nevada.

Ptychoparia haguei (Hall and Whitfield).

Crepicephalus (Loganellus) Haguei Hall and Whitfield, U. S. Geol. Expl. 40th Parl., 4, 1877, p. 210, pl. 2, figs. 14, 15.

Ptychoparia Haguei Walcott, Bull. U. S. Geol. Surv., 10, 1884, p. 36, pl. 6, fig. 6; Mon. U. S. Geol. Surv., 8, 1884, p. 57.

Liostracus haguei Brogger, Geol. Foren. Stockholm Forhandl., 8, 1886, p. 202.

Ptychoparia (Crepicephalus) haguei Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 832, fig.

Cambrian and ?Ordovician (Pogonip): White Pine and Eureka Districts, Nevada.

PTYCHOPARIA LOGANI Walcott. See Loganellus logani.

Ptychoparia maculosa (Hall and Whitfield).

Crepicephalus (Loganellus) maculosus Hall and Whitfield, U. S. Geol. Expl. 40th Parl., 4, 1877, p. 215, pl. 2, figs. 24, 25, 26.

Ptychoparia maculosus Walcott, Mon. U. S. Geol. Surv., 8, 1884, pp. 269, 271.

Cambrian and ?Ordovician (Pogonip): Eureka District, Nevada.

Ptychoparia matheri Walcott.

Ptychoparia matheri Walcott, Smiths. Misc. Coll., 57, 1912, p. 268, pl. 44, figs. 15–17.

Upper Cambrian or Ozarkian (Potsdam): Whitehall, Washington County, New York.

Cotypes.—Cat. Nos. 58585–58587, U.S.N.M.

Ptychoparia minuta (Bradley).

Conocephalites minutus Bradley, Amer. Jour. Sci., 2d ser., 30, 1860, pp. 241–242, figs. 1–3.—Billings, ibid., 2d ser., 30, 1860, pp. 242–243, pp. 337–338, figs. 4a–c.—Bradley, Canadian Nat. Geol., 5, 1860, pp. 420–421, figs. 1–3.—Billings, ibid., pp. 422–425, figs. 4a–c.—Bradley, Proc. Amer. Assoc. Adv. Sci., 14, 1861, pp. 161–163, figs. 1–3.—Billings, ibid., pp. 163–166, figs. 4a–c.—Hall, 16th Ann. Rep. New York State Cab. Nat. Hist., 1863, pp. 150, 151, pl. 8, figs. 5–7; Trans. Albany Inst., 5, 1867, pp. 134–135, pl. 3, figs. 5–7.

Ptychoparia minutus Walcott, Mon. U. S. Geol. Surv., 8, 1884, p. 91; Smiths. Misc. Coll., 57, 1912, p. 267, pl. 43, figs. 20–24.

Upper Cambrian or Ozarkian (Potsdam): Various localities in Essex, Washington, and Franklin Counties, New York.

Plesiotypes.—Cat. Nos. 58567–58570, U.S.N.M.

Ptychoparia newtonensis Weller.

Ptychoparia newtonensis Weller, Geol. Surv. New Jersey, Pal., 3, 1903, p. 117, pl. 3, fig. 10.

Upper Cambrian or Ozarkian (Kittatinny): Newton, New Jersey.

Ptychoparia oweni (Meek and Hayden).

Arionellus (Crepicephalus) Oweni Meek and Hayden, Proc. Acad. Nat. Sci. Philadelphia, 1861, p. 436.

tychoparia oweni—Continued.
Arionellus? Oweni Meek and Hayden, Amer. Jour. Sci. Arts, (2), 33, 1862, p. 74, fig. 4.
Conocephalites oweni Hall, 16th Rep. New York State Cab. Nat. Hist., 1863, p. 155, pl. 8, figs. 17, 20; Trans. Albany Inst., 5, 1867, p. 141, pl. 3, figs. 17, 20.
Conaspis oweni Hall, 16th Rep. New York State Cab. Nat. Hist., 1863, p. 152.
Agraulos Oweni Meek and Hayden, Pal. Up. Missouri, Smithsonian Cont. Knowl., 14, No. 172, 1865, p. 9, text figs. A–C.
Conocoryphe (Ptychoparia) Gallatinensis Meek, 6th Ann. Rep. U. S. Geol. Surv. Terr., 1873, p. 485.
Crepicephalus (Loganellus) centralis Whitfield, Prel. Rep. Pal. Black Hills, U. S. Geog. and Geol. Surv., 1877, p. 10.
Crepicephalus centralis Whitfield, Rep. Geol. Res. Black Hills, Dakota, Powell's U. S. Geol. Surv., 1880, p. 341, pl. 2, figs. 21-24.
Ptychoparia Oweni Walcott, Mon. U. S. Geol. Surv., 8, 1884, p. 55, pl. 10, figs. 3, 3a.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 277.
Cambrian and ?Ordovician (Pogonip): Wyoming; Dakota; Eureka District, Nevada.

TYCHOPARIA SARATOGENSIS Walcott. See Plethopeltis saratogensis.

tychoparia unisulcata (Hall and Whitfield).
Crepicephalus (Loganellus) unisulcatus Hall and Whitfield, U. S. Geol. Expl. 40th Parl., 4, 1877, p. 216, pl. 2, figs. 22, 23.
Ptychoparia unisulcatus Walcott, Mon. U. S. Geol. Surv., 8, 1884, p. 58.
Cambrian and ?Ordovician (Pogonip): Eureka District, Nevada.

tychoparia zenkeri (Billings).
Conocephalites Zenkeri Billings, Canadian Nat. Geol., 5, 1860, p. 305, fig. 4; p. 422; Amer. Jour. Sci., 2d ser., 30, 1860, p. 243; Proc. Acad. Assoc. Adv. Sci., 14, 1861, p. 163; Geol. Canada, Geol. Surv. Canada, 1863, p. 233, fig. 253.—Chapman, Expos. Min. Geol. Canada, 1864, p. 140, fig. 150; p. 164, fig. 161.—Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 398, fig. 375.
Ptychoparia zenkeri Miller, N. A. Geol. Pal., 1889, p. 565, fig. 1052.
Ozarkian? (Levis—erratic): Point Levis, Quebec.

TYCHOPHYLLUM Lonsdale. Genotype: P. stokesi Edwards and Haime.
Ptychophyllum Lonsdale, Sil. System, 1839, p. 691.—Edwards and Haime, Mon. d. Polyp. Foss. d. Terr. Pal., 1851 (Arch. du Mus. d'Hist. Nat., 5), pp. 169, 406.—Pictet, Traité de Pal., 2d ed., 4, 1857, p. 457.—Milne-Edwards, Hist. Nat. Corall., 3, 1860, p. 399.—Dybowski, Archiv. f. Natur. Liv-, Ehst- und Kurl., 5, 1873, pp. 336, 398.—Salter, Cat. Camb. Sil. Foss., 1873, p. 113.—Zittel, Handb. Pal., 1, 1879, p. 229.—Roemer, Leth. geog., pt. 1, Leth. Pal. 1883, p. 358.—Miller, N. A. Geol. Pal., 1889, p. 201.—Sherzer, Amer. Geol., 7, 1891, pp. 284-289; Bull. Geol. Soc. Amer., 3, 1892, p. 278.—Nicholson, Rec. Geol. Surv. N. S. Wales, 4, 1894, p. 16.—Koken, Die Leitfossilien, Leipzig, 1896, p. 308.—Zittel-Eastman Textb. Pal., 1, 1900, p. 78; 2d ed. 1913, p. 85.—Grabau and Shimer, N. A. Index Fossils, 1, 1906, p. 62.

Ptychophyllum benedicti Greene.
Ptychophyllum benedicti Greene, Cont. Indiana Pal., pt. 4, 1900, p. 28, pl. 12, figs. 4-6.
Niagaran (Louisville): Bear Grass Creek quarries, near Louisville, Kentucky.

PTYCHOPHYLLUM CANADENSE Billings. See Chonophyllum canadense.

Ptychophyllum expansum (Owen).

Anthophyllum expansum Owen, Geol. Expl. Iowa, Wisconsin, and Illinois, 1844, p. 69, pl. 13, fig. 3.

Cyathophyllum corintheum Owen, ibid., 1844, p. 69, pl. 13, fig. 6.

Cyathophyllum undulatum et multiplicatum Owen, ibid., 1844, p. 69, pl. 13, fig. 10.

Ptychophyllum expansum Calvin, Amer. Geol., 12, 1893, pp. 108, 110, pl. 5, figs. 1–4.

Niagaran: Iowa and Wisconsin.

Ptychophyllum floriforme Hall.

Ptychophyllum floriforme Hall, 35th Rep. New York State Mus. Nat. Hist., 1884, p. 409 (Extras, 1882, p. 5).

Niagaran (Racine): Racine, Wisconsin.

Ptychophyllum fulcratum Hall.

Ptychophyllum fulcratum Hall, 35th Rep. New York State Mus. Nat. Hist., 1884, p. 410 (Extras, 1882, p. 6).

Niagaran (Louisville): Louisville, Kentucky.

Ptychophyllum invaginatum Davis.

Ptychophyllum invaginatum Davis, Kentucky Foss. Corals, Geol. Surv. Kentucky, pt. 2, 1885, pl. 105, fig. 8.

Niagaran (Louisville): Near Louisville, Kentucky.

Ptychophyllum ipomœa Davis.

Ptychophyllum ipomœa Davis, Kentucky Fossil Corals, Geol. Surv. Kentucky, pt. 2, 1885, pl. 104, fig. 7; pl. 105, figs. 9, 10.—Foerste, Proc. Boston Soc. Nat. Hist., 24, 1890, p. 342.

Niagaran (?Louisville): Louisville, Kentucky.

Upper Medinan (Brassfield): Near Centerville, Ohio.

Ptychophyllum stokesi Edwards and Haime.

Ptychophyllum stokesi Edwards and Haime, British Foss. Corals, 1850, p. 69; Mon. Polyp. Foss. d. Terr. Pal. (Arch. du Mus. d'Hist. Nat., 5), 1851, p. 407.—Milne-Edwards, Hist. Nat. d. Corall., 3, 1860, p. 400.—Davis, Kentucky Fossil Corals, Geol. Surv. Kentucky, pt. 2, 1885, pl. 105, figs. 1–7.—Grabau and Shimer, N. A. Index Fossils, 1, 1906, p. 62.

Omphyma Stockesii Rominger, Geol. Surv. Michigan, 3, pt. 2, 1876, p. 119, pl. 44, upper tier.

Omphyma Stokesi Whitfield, Geol. Wisconsin, 4, 1882, p. 279, pl. 14, fig. 10; pl. 15, fig. 4.

Niagaran: Drummond Island, Lake Huron; Louisville, Kentucky; Racine, Wisconsin.

Plesiotypes.—Cat. No. 52775, U.S.N.M. (Davis).

Ptychophyllum vulcanius Foerste.

Ptychophyllum vulcanius Foerste, Jour. Geol., 11, 1903, p. 713.

Niagaran (Brownsport): West of Hope Creek, west Tennessee.

PTYCHOPTERIA Hall. Genotype: P. eugenia Hall.

Ptychopteria Hall, Pal. New York, 5, pt. 1, Lam., 1883, p. 3; ibid., 1884, p. 12; 35th Rep. New York State Mus. Nat. Hist., 1884, p. 406c; 1st Rep. State Geol. New York, 1884, p. 13.—Jackson, Mem. Boston Soc. Nat. Hist., 4, 1890, p. 386.—Whidborne, Mon. Dev. Fauna South England, 3, Pal. Soc., 1897, p. 125.

Ptychopteria? subquadrata Weller.
Ptychopteria? subquadrata Weller, Geol. Surv. New Jersey, Pal., 3, 1903, p. 244, pl. 22, fig. 2.
Helderbergian (Decker Ferry): Two miles south of Tristates, New York.

PTYCHOPYGE HUTTONI Clarke. See Basilicus huttoni.

PTYCHOPYGE JERSEYENSIS Weller. See Bathyurus longispinus.

PTYCHOPYGE ROMINGERI Clarke. See Basilicus romingeri.

PTYCHOPYGE ULRICHI Clarke. See Basilicus romingeri.

PTYLOGRAPSUS FOLIACEUS Spencer. See Ptilograptus foliaceus.

PTYLOPORELLA Hall. See Ptiloporella Hall.

PYANOMYA Miller. Genotype: P. gibbosa Miller.
Pyanomya Miller, Jour. Cincinnati Soc. Nat. Hist., 1881, 4, p. 318; N. A. Geol. Pal., 1889, p. 509.

Pyanomya faberi Miller.
Pyanomya faberi Miller, N. A. Geol. Pal., 1889, p. 509, fig. 912.
Maysville (Fairmount): Cincinnati, Ohio.

Pyanomya gibbosa Miller.
Pyanomya gibbosa Miller, Jour. Cincinnati Soc. Nat. Hist., 4, 1881, p. 318, pl. 8, figs. 4, 4a, 4b; N. A. Geol. Pal., 1889, p. 509, fig. 913.
Maysville (Fairmount): Cincinnati, Ohio.

PYCNOCERAS Hyatt. Genotype: P. apertum Hyatt.
Pycnoceras Hyatt, Proc. Amer. Phil. Soc., 32, 1894, p. 454.—Miller, N. A. Geol. Pal. 2d App., 1897, p. 777.

Pycnoceras apertum Hyatt.
Pycnoceras apertum Hyatt, Proc. Amer. Phil. Soc., 32, 1894, p. 455, pl. 5, figs. 18-20.
Canadian (Quebec): Port au Choix, Newfoundland.

Pycnoceras calciferiforme Hyatt.
Pycnoceras calciferiforme Hyatt, Proc. Amer. Phil. Soc., 32, 1894, p. 456.
Pycnoceras calciforme Miller, N. A. Geol. Pal., 2d App., 1897, p. 777.
Canadian: Port au Choix and Schooner Island, Newfoundland; Phillipsburg, Quebec.

PYCNOCERAS CALCIFORME Miller. See Pycnoceras calciferiforme.

PYCNOCRINUS Miller. Genotype: Glyptocrinus shafferi Miller.
Pycnocrinus Miller, Jour. Cincinnati Soc. Nat. Hist., 6, 1883, pp. 219, 231.—Wachsmuth and Springer, Proc. Acad. Nat. Sci. Philadelphia, 1885, p. 324 (Rev. Pal., p. 102).—Miller, N. A. Geol. Pal., 1889, p. 276.—Bather, Treatise on Zool. (Lankester), pt. 3, 1900, p. 161.—Zittel, Grundzuge Pal., 1, 1910, p. 462.
Glyptocrinus (part) Miller, Cincinnati Quart. Jour. Sci., 1874, p. 348.—Wachsmuth and Springer, Mem. Mus. Comp. Zool., Harvard, 20, 1897, p. 267.

Pycnocrinus germanus (Miller).
Glyptocrinus shafferi var. germanus Miller, Jour. Cincinnati Soc. Nat. Hist., 3, 1880, p. 233, pl. 7, figs. 2, 2a.

Pycnocrinus germanus—Continued.

Pycnocrinus germanus Miller, ibid., 6, 1883, p. 232; N. A. Geol. Pal., 1889, p. 276, fig. 412.

Glyptocrinus? Shafferi Wachsmuth and Springer, Mem. Mus. Comp. Zool., Harvard, 20, 1897, p. 272, pl. 21, figs. 3d-f.

Maysville (Corryville): Cincinnati, Ohio, and vicinity.

Pycnocrinus shafferi (Miller).

Glyptocrinus Shafferi Miller, Cincinnati Quart. Jour. Sci., 2, 1875, p. 277, fig. 20; Jour. Cincinnati Soc. Nat. Hist., 3, 1880, p. 233, pl. 7, figs. 3a-c.—James, ibid., 19, 1897, p. 116.

Pycnocrinus shafferi Miller, Jour. Cincinnati Soc. Nat. Hist., 6, 1883, p. 231; N. A. Geol. Pal., 1889, p. 277, figs. 413-415.

Maysville (Corryville): Cincinnati, Ohio, and vicinity.

PYCNOMPHALUS Lindström. Genotype: P. obesus Lindström.

Pycnomphalus Lindström, Kongl. Sven. Vet. Akad. Handl., 19, No. 6, 1881, p. 153.—Frech, Zeits. d. d. geol. Gesell, 46, 1894, p. 465.—Koken, Die Leitfossilien, Leipzig, 1896, pp. 399, 459.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 672.

Pycnomphalus solarioides (Hall).

Pleurotomaria solarioides Hall, Pal. New York, 2, 1852, p. 348, pl. 84, fig. 4a-b.—Billings, Geol. Canada, Geol. Surv. Canada, 1863, p. 341, fig. 347a, b.—Nicholson, Quart. Jour. Geol. Soc. London, 31, 1875, p. 550, pl. 26, fig. 15; Rep. Pal. Prov. Ontario, pt. 2, p. 72, pl. 3, fig. 15.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 715, fig.

Pycnomphalus solarioides Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 2, 1895, p. 88, pl. 13, figs. 3, 4-8.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 672, fig. 931.

Niagaran (Guelph): Galt, Ontario; Wisconsin.

PYCNOPEGMA Rauff. Genotype: P. pileum Rauff.

Pycnopegma Rauff, Palæontographica, 41, 1895, p. 232.

Pycnopegma callosum Rauff.

Pycnopegma callosum Rauff, Palæontographica, 41, 1895, p. 236, figs. 88-94, pl. 8; figs. 7-9 (pl. in vol. 40).

Niagaran (Brownsport): Decatur County, Tennessee.

Pycnopegma pileum Rauff.

Pycnopegma pileum Rauff, Palæontographica, 41, 1895, p. 233, figs. 84-87, pl. 8; figs. 5, 6 (pl. in vol. 40).

Niagaran (Brownsport): Decatur County, Tennessee.

Pycnopegma stromatoporoides Rauff.

Pycnopegma stromatoporoides Rauff, Palæontographica, 41, 1895, p. 239, figs. 95-97.

Niagaran (Brownsport): Decatur County, Tennessee.

PYCNOSACCUS Angelin. Genotype: Cyathocrinites? scrobiculatus Hisinger.

Pycnosaccus Angelin, Icon. Crinoid, 1878, p. 13.—Zittel, Handb. Pal., 1, 1879, p. 356.—Wachsmuth and Springer, Proc. Acad. Nat. Sci. Philadelphia, 1890, p. 388.—Zittel, Grundzüge Pal., 1895, p. 138.—Wachsmuth, Zittel-Eastman Textb. Pal., 1, 1896, p. 164.—Weller, Jour. Geol., 6, 1898, p. 700.—Bather, Treatise on Zool., pt. 3, Echinoderma, London, 1900, p. 187, fig. 107.—Weller, Bull. Chicago Acad. Sci. Nat. Hist. Surv., 4, pt. 1, 1900, p. 149, fig. 55.—Springer, Amer. Geol., 30, 1902, p. 94; Jour. Geol., 14, 1906, p. 484; Zittel-Eastman Textb. Pal., 2d ed., 1913, p. 203.

Pycnosaccus americanus Weller.
Pycnosaccus americanus Weller, Bull. Chicago Academy of Science, 4, 1900, p. 149, pl. 15, fig. 12.
Niagaran (Racine): Hawthorne, Illinois.

Pycnosaccus caliculus (Hall).
Lecanocrinus caliculus Hall, Pal. New York, 2, 1852, p. 203, pl. 46, figs. 3a, b.
Pycnosaccus caliculus Springer, Mon. Crin. Flex., Smiths. Inst. (in press).
Clinton (Rochester): Lockport, New York.

Pycnosaccus dubius Springer.
Pycnosaccus dubius Springer, Mon. Crin. Flex., Smiths. Inst. (in press).
Niagaran (Brownsport): Decatur County, Tennessee.

Pycnosaccus patei Springer.
Pycnosaccus patei Springer, Mon. Crin. Flex., Smiths. Inst. (in press).
Niagaran (Brownsport): Decatur County, Tennessee.

Pycnosaccus tenuibrachiatus Springer.
Pycnosaccus tenuibrachiatus Springer, Mon. Crin. Flex., Smiths. Inst. (in press).
Helderbergian (Keyser): Keyser, West Virginia.

Pycnosaccus welleri Springer.
Pycnosaccus welleri Springer, Mon. Crin. Flex., Smiths. Inst. (in press).
Niagaran (Brownsport): Decatur County, Tennessee.

PYCNOSTYLUS Whiteaves. Genotype: P. guelphensis Whiteaves.
Pycnostylus Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 1, 1884, p. 2.—Miller, N. A. Geol. Pal., 1889, p. 202.—Schluter, Abhandl. z. geol. Specialkarte Preussen und den Thuringischen Staaten, 8, Heft 4, 1889, p. 9 (267), footnote.—Sherzer, Amer. Geol., 7, 1891, pp. 284-289.—Lambe, Cont. Can. Pal., Geol. Surv. Canada, 4, pt. 2, 1901, p. 131.—Grabau and Shimer, N. A. Index Fossils, 1, 1906, p. 61.

Pycnostylus elegans Whiteaves.
Pycnostylus elegans Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 1, 1884, p. 4, pl. 1, figs. 2, 2a.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 847, figs.—Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 2, 1895, p. 49 (loc. occ.).—Lambe, Cont. Can. Pal., Geol. Surv. Canada, 4, pt. 2, 1901, p. 133.—Whiteaves, Geol. Surv. Canada, Pal. Foss., 3, pt. 4, 1906, p. 248 (loc. occ.).—Lambe, Cruise of the "Neptune", App. 4, 1906, p. 326.
Niagaran: Hespeler and Durham, Ontario (Guelph); Southampton Island, Hudson Bay and Ekwan River, Canada.

Pycnostylus guelphensis Whiteaves.
Pyncnostylus Guelphensis Whiteaves, Pal. Foss. Geol. Surv. Canada, 3, pt. 1, 1884, p. 3, pl. 1, figs. 1a, b.—Miller, N. A. Geol. Pal., 1889, p. 202, fig. 212.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 847, figs.—Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 2, 1895, p. 49.—Lambe, Cont. Can. Pal., Geol. Surv. Canada, 4, pt. 2, 1901, p. 132, pl. 10, figs. 4, 4a.—Whiteaves, Geol. Surv. Canada, Pal. Foss., 3, pt. 4, 1906, p. 247 (loc. occ.).—Grabau and Shimer, N. A. Index Fossils, 1, 1906, p. 62, fig. 91.
Amplexus laxatus Billings, Geol. Canada, 1863, p. 340 (nom. nud.).—Nicholson (part), Rep. Pal. Prov. Ontario, pt. 2, 1875, p. 77.
Niagaran: New Hope, Guelph, etc., Ontario; Wisconsin (Guelph); Ekwan River, Canada.

PYRENOMŒUS Hall. Genotype: P. cuneatus Hall.

Pyrenomœus Hall, Pal. New York, 2, 1852, p. 87.—Ulrich, Geol. Surv. Ohio, 7, 1893, p. 681.—Miller, N. A. Geol. Pal., 1889, p. 509.

Pyrenomœus cuneatus Hall.

Pyrenomœus cuneata Hall, Pal. New York, 2, 1852, p. 87, pl. 27, figs. 3, 12a, b, c.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 848, figs.

Clinton: Walcott and New Hartford, New York.

Pyrenomœus decipiens Ulrich.

Pyrenomœus decipiens Ulrich, Geol. Surv. Ohio, 7, 1893, p. 682, pl. 51, figs. 7, 8.

Maysville (Corryville): Cincinnati, Ohio.

Cotypes.—Cat. No. 46296, U.S.N.M.

Pyrenomœus subcuneatus Ulrich.

Pyrenomœus subcuneatus Ulrich, Geol. Surv. Ohio, 7, 1893, p. 682, pl. 51, fig. 6.

Trenton (Upper): River quarries, Covington, Kentucky.

Holotype.—Cat. No. 46297, U.S.N.M.

PYRITONEMA METISSICUM Rauff. See Hyalostelia? metissica.

QUENSTEDTIA Rominger. See Romingeria Nicholson.

RAFINESQUINA Hall and Clarke. Genotype: Strophomena alternata Emmons.

Strophomena (not Rafinesque) Billings, Canadian Nat. Geol., 1, 1856, p. 133; Canadian Jour., 6, 1861, p. 329; Pal. Fossils, 1, 1862, p. 115.—Hall, Pal. New York, 4, 1867, p. 76.—Meek, Pal. Ohio, 1, 1873, p. 73.—N. H. Winchell, 9th Ann. Rep. Geol. Nat. Hist. Surv. Minnesota, 1881, p. 118.—Shaler, Fossil Brachiopoda of the Ohio Valley, 1887, p. 4.—Herrick, Bull. Sci. Lab. Denison Univ., 4, 1888, p. 14.—Nettelroth, Kentucky Fossil Shells, Mem. Kentucky Geol. Surv., 1889, p. 159.

Rafinesquina Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 281.—Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 400.—Hall and Clarke, 11th Ann. Rep. New York State Geol., 1894, p. 279.—Schuchert, Zittel-Eastman Textb. Pal., 1, 1900, p. 312; 2d ed., 1913, p. 384.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 211.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 893.

Rafinesquina alternata (Emmons).

Leptæna alternata Conrad, 2d Ann. Rep. New York Geol. Surv., 1838, p. 115 (undefined).—Hall, Pal. New York, 1, 1847, pp. 102, 286, pl. 31, fig. 1; pl. 31A, fig. 1; pl. 79, fig. 2.—Rogers, Geol. Pennsylvania, 2, pt. 2, 1858, p. 818, fig. 600.

Strophomena alternata Conrad, 3d Ann. Rep. New York Geol. Surv., 1839, p. 63; 4th Rep., ibid., 1840, p. 201; 5th Rep., ibid., 1841, p. 37 (undefined).—Emmons, Geol. New York, Rep. 2d Dist., 1842, p. 395, fig. 3.—Owen (Emmons), Amer. Jour. Sci. Arts, 47, 1844, p. 366, fig. 3.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 197, pl. 11, figs. 1 a–c, 3, 5b, 7; pl. 17, fig. 2.—Billings, Canadian Nat. Geol., 1, 1856, p. 204, figs. 3, 4; ibid., 5, 1860, p. 51.—Emmons, Man. Geol., 1860, p. 99, fig. 88.—Hitchcock, Geol. Vermont, 1, 1862, p. 293, fig. 199.—Chapman, Canadian Jour., n. s., 7, 1862, p. 112, fig. 95; ibid., 8, 1863, p. 199, fig. 186.—Billings, Geol. Canada, 1863, p. 163, fig. 140.—Chapman, Expos. Min. Geol. Canada, 1864, p. 115, fig. 95; p. 171, fig. 186.—Billings, Geol. Surv. Canada, Pal. Foss., 1, 1865, p. 117 (adv. sheets 1862).—Safford, Geol. Tennessee, 1869, p. 275, fig. 3.—Meek, Pal. Ohio, 1, 1873, p. 88, pl. 7, fig. 1.—Miller, Cincinnati Quart. Jour. Sci., 1874, p. 45; ibid., 2, 1875, p. 51.—Shaler,

Rafinesquina alternata—Continued.

Foss. Brach. Ohio Valley, 1876, p. 424, pls. 2, 3.—Zittel, Handb. Pal., 1, Munich, 1880, p. 678, fig. 509.—White, 2d Ann. Rep. Indiana Bur. Stat., Geol., 1880, p. 481, pl. 1, figs. 6, 7; 10th Rep. State Geol. Indiana, 1881, p. 113, pl. 1, figs. 6, 7.—Chamberlin, Geol. Wisconsin, 1, 1883, p. 155, fig.—Hall, 2d Ann. Rep. New York State Geol., 1883, pl. 38, figs. 6–11; 35th Rep. New York State Mus. Nat. Hist., 1884, pl. 22, fig. 2.—Miller, N. A. Geol. Pal., 1889, p. 381, fig. 622.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1121, figs.—Keyes, Geol. Surv. Missouri, 5, 1895, p. 70, pl. 39, fig. 3.

Orthis huroniensis Castelnau, Essai Syst. Sil. l'Amerique Septentrionale, 1843, p. 37, pl. 14, fig. 6.

Orthis plana Castelnau (not Pander), ibid., 1843, p. 38, pl. 14, fig. 1.

Strophomena angulata? Owen, Geol. Expl. Iowa, Wisconsin, Illinois, 1844, pl. 18, figs. 1, 3.

Rafinesquina alternata Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 282, pl. 8, figs. 6–11, 27, 28; pt. 2, 1895, pl. 84, figs. 17, 18.—Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 404, pl. 31, figs. 32–34.—Whiteaves, Pal. Foss., 3, pt. 3, 1897, p. 171.—Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 337.—Cumings, Amer. Geol., 28, 1901, p. 375.—Ruedemann, Bull. New York State Mus., 49, for 1901, 1902, p. 16, pl. 2, fig. 1.—Weller, Geol. Surv. New Jersey, Pal., 3, 1903, p. 148, pl. 9, figs. 12, 13.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 211, fig. 251.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 926, pl. 37, figs. 1–1e.—Bassler, Bull. Virginia Geol. Surv., 2a, 1909, pl. 14, fig. 9.

Trenton-Richmond: New York, Ohio, Indiana, Kentucky, Tennessee, Missouri, Illinois, Virginia, Canada, etc.

Rafinesquina alternata alternistriata (Hall).

Leptæna alternistriata Hall, Pal. New York, 1, 1847, p. 109, pl. 31B, fig. 1.

Strophomena alternistriata Emmons, Amer. Geology, 1, pt. 2, 1855, p. 198, pl. 11, figs. 7, 10.—Hall, 12th Rep. New York State Cab. Nat. Hist., 1859, p. 70.—Emmons, Man. Geol., 1860, p. 95, figs. 83, 84.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1124, figs.

Strophomena alternata var. alternistriata Miller, Cincinnati Quart. Jour. Sci., 2, 1875, p. 53.

Rafinesquina alternistriata Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 283.

Maysville: Cincinnati, Ohio, and vicinity; Indiana; Kentucky.

Rafinesquina alternata fracta (Meek).

Strophomena alternata var. fracta Meek, Pal. Ohio, 1, 1873, p. 91, pl. 7, fig. 3.

Strophomena fracta Miller, Cincinnati Quart. Jour. Sci., 1, 1874, p. 13; ibid., 2, 1875, p. 54.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1127, figs.

Rafinesquina alternata var. fracta Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 927, pl. 37, figs. 5, 5a.

Maysville (McMillan): Cincinnati, Ohio, and vicinity.

Rafinesquina alternata loxorhytis (Meek).

Strophomena alternata var. loxorhytis Meek, Pal. Ohio, 1, 1873, p. 91.—Miller, Cincinnati Quart. Jour. Sci., 2, 1875, p. 53.

Rafinesquina alternata-loxorhytis Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 928, pl. 37, figs. 2, 2a.

Richmond (Waynesville): Ohio; Indiana; Kentucky.

RAFINESQUINA ALTERNATA var. LOXORHYTIS Winchell and Schuchert. See Rafinesquina kingi.

RAFINESQUINA ALTERNATA var. NASUTA Cumings. See Rafinesquina nasuta.

Rafinesquina alternata ponderosa Ulrich.
Leptæna alternata Hall (part), Pal. New York, 1, 1847, pl. 31, fig. 11.
Rafinesquina alternata var. ponderosa Ulrich in Hayes and Ulrich, U. S. Geol. Surv., Folio 95, illust. sheet, 1903, fig. 20.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 929, pl. 37, figs. 3, 3a.
Maysville (Bellevue): Cincinnati, Ohio, and vicinity; Indiana and Kentucky.
Holotype.—Cat. No. 35400, U.S.N.M.

Observation.—This shell was known to collectors under the name of "ponderosa" since 1840, but was not recognized as a distinct form until 1903.

RAFINESQUINA ALTERNISTRIATA Hall and Clarke. See Rafinesquina alternata alternistriata.

RAFINESQUINA? ATAVA Schuchert. See Eoorthis atava.

Rafinesquina aurora (Billings).
Strophomena aurora Billings, Geol. Surv. Canada, Pal. Fossils, 1, 1865, p. 218, fig. 202.
Rafinesquina aurora Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 338.
Chazyan (Quebec, K-N, P): Point Rich, Table Head, etc., Newfoundland.

Rafinesquina ceres (Billings).
Strophomena ceres Billings, Canadian Nat. Geol., 5, 1860, p. 54; Geol. Surv. Canada, Pal. Fossils, 1, 1865, p. 119 (adv. sheets, 1862).
Rafinesquina Ceres Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 2, 1895, p. 120 (loc. occ.).—Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 338.
Richmond: Charleton Point, Anticosti (Charleton); Stony Mountain, Manitoba (Stony Mountain).
Gamachian (Ellis Bay): Gamache Bay, Anticosti.

Rafinesquina champlainensis Raymond.
Rafinesquina champlainensis Raymond, Bull. Amer. Pal., 1902, 3, p. 37, pl. 18, fig. 5, 6; Ann. Carnegie Mus., 7, p. 233, figs. 6–9.
Chazyan: Crown Point, Valcour Island, Bluff Point, and Chazy, New York; Isle La Motte and South Hero, Vermont (Crown Point); East Tennessee (Lenoir).

Rafinesquina declivis (James).
Strophomena declivis James, Cincinnati Quart. Jour. Sci., 1, 1874, p. 240.
Rafinesquina declivis Foerste, Bull. Sci. Lab. Denison Univ., 16, 1910, p. 43, pl. 2, fig. 4; pl. 5, figs. 12a–d; ibid., 17, 1912, p. 127, pl. 8, fig. 10.
Trenton (Cynthiana): Boyds Station, Kentucky.

Rafinesquina? delicatula Savage.
Rafinesquina? delicatula Savage, Bull. Geol. Surv. Illinois, 23, 1913, p. 45, pl. 1, fig. 9.
Upper Medinan (Girardeau): Near Thebes, Illinois.

Rafinesquina deltoidea (Conrad).
Strophomena deltoidea Conrad, 3d Ann. Rep. New York Geol. Surv., 1839, p. 64; 5th Rep., ibid., 1841, p. 37.—Vanuxem, Geol. New York, Rep. 3d Dist., 1842, p. 46, fig. 2.—Emmons, Geology New York, Rep. 2d Dist., 1842, p. 389, fig. 2.—Mather, Nat. Hist. New York, Geol., 1, 1843, p. 397, fig. 2.—Owen, Amer. Jour. Sci. Arts, 47, 1844, p. 363, fig. 2; Geol. Expl. Iowa, Wisconsin, Illinois, 2d ed., 1844, p. 82, pl. 16, fig. 8; pl. 17, fig. 6.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 197.—Billings, Geol. Canada, 1863, p. 163, fig. 141.—

Rafinesquina deltoidea—Continued.

Davidson, Mon. British Sil. Brach., Pal. Soc., 1871, p. 292, pl. 42, figs. 1–5; pl. 39, fig. 22.—Shaler, Mem. Geol. Surv. Kentucky, 1, 1876, p. 27.—Davidson, Mon. Brit. Sil. Brach., 5, Sil. Suppl., Pal. Soc., 1883, p. 197, pl. 15, figs. 16–32.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1125, figs.

Strophomena camerata Conrad, Jour. Acad. Sci. Philadelphia, 8, 1842, p. 254, pl. 14, fig. 5.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 197.

Leptæna camerata Hall, Pal. New York, 1, 1847, p. 106, pl. 31A, fig.

Leptæna deltoides Hall, Pal. New York, 1, 1847, p. 106, pl. 31A, fig. 3.

Streptorhynchus (Strophonella) deltoidea Hall, 2d ed. Ann. Rep. New York State Geol., 1883, pl. 42, figs. 1, 2, 4 (not fig. 3).

Rafinesquina deltoidea Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pl. 9A, figs. 1, 2, 4.—Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 403, pl. 31, figs. 30, 31.—Whiteaves, Pal. Foss., 3, pt. 3, 1897, p. 170.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 212.

Rafinesquina deltoidea var. Ruedemann, Bull. New York State Mus., 49, 1902, p. 17.

Trenton: Trenton Falls, etc., New York; St. Paul, Cannon Falls, etc., Minnesota; Oshkosh, Wisconsin; Dubuque, Iowa; Pike County, Missouri; Ottawa, Lake Winnipeg, etc., Canada.

Rafinesquina distans Raymond.

Rafinesquina distans Raymond, Ann. Carnegie Mus., 3, 1906, p. 575; 7, 1911, p. 234, pl. 35, fig. 1.

Chazyan (Crown Point and Valcour): Valcour Island and Crown Point, New York.

RAFINESQUINA FASCIATA Hall and Clarke. See Leptæna incrassata.

Rafinesquina imbrex (?Pander) Billings.

Strophomena imbrex (?Pander) Billings, Geol. Surv. Canada, Pal. Foss., 1, p. 128, fig. 106 (adv. sheets, 1862).

Rafinesquina imbrex Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 338.

Richmond (Charleton) and Gamachian (Ellis Bay): Anticosti.

Observation.—Refers to a new species of Leptæna (Twenhofel).

Rafinesquina incrassata (Hall).

Leptæna incrassata Hall, Pal. New York, 1, 1847, p. 19, pl. 4 bis, fig. 2.—Rogers, Geol. Pennsylvania, 2, pt. 2, 1858, p. 817, fig. 591.

Strophomena incrassata Billings, Canadian Nat. Geol., 4, 1859, p. 443.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1128, fig.

Rafinesquina incrassata Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 339.

Chazyan: Chazy, New York (Crown Point and Valcour); East Tennessee (Lenoir).

Rafinesquina kingi (Whitfield).

Strophomena kingi Whitfield, Ann. Rep. Geol. Surv. Wisconsin, 1877, p. 72; Geol. Wisconsin, 4, 1882, p. 261, pl. 12, figs. 15, 16.

Rafinesquina alternata var. loxorhytis Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 407, pl. 31, figs. 35–37; pl. 32, figs. 59, 60.

Rafinesquina kingi Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 283.

Richmond (Maquoketa): Delafield, Wisconsin; near Spring Valley, Minnesota.

Rafinesquina lata Whiteaves.

Rafinesquina lata Whiteaves, Canadian Rec. Sci., 1895, p. 392; Geol. Surv. Canada, Pal. Foss., 3, pt. 3, 1897, p. 172, pl. 19, figs. 2–5.

Strophomena lata Miller, N. A. Geol. Pal., 2d App., 1897, p. 764 (gen. ref.).

Richmond: Red River Valley and Lake Winnipeg, Manitoba.

Rafinesquina leda Whiteaves. See Stropheodonta(?) leda.

Rafinesquina mesicosta (Shumard).

Leptæna mesacosta Shumard, Geol. Rep. Missouri, 1885, p. 205, pl. C, fig. 2.—Keyes, Geol. Surv. Missouri, 5, 1895, p. 76.

Rafinesquina mesicosta Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 339.—Savage, Bull. Geol. Surv. Illinois, 23, 1913, p. 46, pl. 1, fig. 10, p. 70.

Upper Medinan: Cape Girardeau County, Missouri (Girardeau); near Thebes, Illinois; Edgewood, and Louisiana, Missouri (Edgewood).

Rafinesquina mesicosta mesistria Savage.

Rafinesquina? mesicosta var. mesistria Savage, Bull. Geol. Surv. Illinois, 23, 1913, p. 70, pl. 4, fig. 6.

Upper Medinan (Edgewood): Louisiana, etc., Missouri; below Hamburg, Calhoun County, Illinois.

Rafinesquina minnesotensis (N. H. Winchell).

Strophomena deltoidea Owen (not Conrad), Geol. Expl. Iowa, Wisconsin, and Illinois, 1844, pl. 16, fig. 8; pl. 17, fig. 6.

Leptæna deltoidea Owen, Geol. Rep. Wisconsin, Iowa, and Minnesota, 1852, p. 620, tab. 2B, fig. 10 (not the middle figure).

Strophomena incrassata Hall (not 1847), Geol. Wisconsin, 1, 1862, p. 42, fig. 16.—Hall (not 1847), 2d Ann. Rep. New York State Geol., 1883, pl. 38, figs. 1-5.

Strophomena minnesotensis N. H. Winchell, 9th Ann. Rep. Geol. Nat. Hist. Surv. Minnesota, 1881, p. 120.

Rafinesquina minnesotensis Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 283.—Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 401, pl. 31, figs. 25-29.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 212, fig. 252.

Black River: Minneapolis, etc., Minnesota; Beloit, Wisconsin; Decorah, Iowa; Kentucky; Tennessee.

Rafinesquina minnesotensis inquassa (Sardeson).

Strophomena inquassa Sardeson, Bull. Minnesota Acad. Nat. Sci., 3, 1892, p. 334, pl. 5, figs. 22-24.

Rafinesquina minnesotensis var. inquassa Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 403, pl. 31, figs. 27, 28.

Black River (Decorah): Minneapolis and St. Paul, Minnesota; Mineral Point, Wisconsin.

Rafinesquina mucronata Foerste.

Rafinesquina mucronata Foerste, Bull. Sci. Lab. Denison Univ., 17, 1914, p. 265, pl. 2, fig. 7a, b.

Cincinnatian (Pulaski): Vars, Chambly, etc., Quebec.

Rafinesquina nasuta (Conrad).

Strophomena nasuta Conrad, Jour. Acad. Nat. Sci. Philadelphia, 8, 1842, p. 260.—Emmons, Geol. New York, Rep. 3d Dist., 1842, p. 403, fig. 3.—Owen, Amer. Jour. Sci. Arts, 47, 1844, p. 377, fig. 3; Geol. Expl. Iowa, Wisconsin, Illinois, 2d ed., 1844, p. 84, pl. 17, fig. 10.—Emmons, Amer. Geol., 1, pt. 2, 1885, pl. 15, fig. 22; pl. 17, fig. 3.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 1129, figs.

Strophomena alternata var. nasuta Miller, Cincinnati Quart. Jour. Sci., 2, 1875, p. 53.

Rafinesquina alternata-nasuta Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, p. 928, pl. 37, fig. 4.

Rafinesquina nasuta—Continued.
Rafinesquina nasuta Feorste, Bull. Sci. Lab. Denison Univ., 17, 1914, p. 263, pl. 3, figs. 2a, b; pl. 4, fig. 2c.
Cincinnatian: Rome, etc., Oneida and Jefferson Counties, New York (Pulaski); Cincinnati, Ohio, and vicinity (Maysville).

RAFINESQUINA NITENS Hall and Clarke. See Leptæna nitens.

Rafinesquina(?) obscura Hall.
Leptæna obscura Hall, Pal. New York, 2, 1852, pp. 62, 103, pl. 21, figs. 2, 6.
Strophomena obscura Hall, 12th Rep. New York State Cab. Nat. Hist., 1859, p. 82.
Strophomena obscura? Foerste, Proc. Boston Soc. Nat. Hist., 24, 1890, p. 306, pl. 6, figs. 15, 16.
Rafinesquina? obscura Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 283.
Clinton (Upper): Near Utica and Kirkland, New York; Cumberland Gap, Tennessee.

Rafinesquina squamula (James).
Strophomena squamula James, Cat. Foss. Cincinnati Group, 1871, p. 9 (nom. nud.); Cincinnati Quart. Jour. Sci., 1, 1874, p. 335.—Miller, Cincinnati Quart. Jour. Sci., 2, 1875, p. 56.
Rafinesquina squamula Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 283.—Foerste, Bull. Sci. Lab. Denison Univ., 17, 1914, p. 264.
Eden and Maysville: Cincinnati, Ohio, and vicinity.

Rafinesquina tenuilineata (Conrad).
Strophomena tenuilineata Conrad, Jour. Acad. Nat. Sci., Philadelphia, 8, 1842, p. 259.—Hall, 12th Rep. New York State Cab. Nat. Hist., 1859, p. 70.
Leptæna tenuilineata Hall, Pal. New York, 1, 1847, p. 115, pl. 31B, fig. 8.
Rafinesquina tenuilineata Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 340.
Trenton: New York.

Rafinesquina ulrichi (James).
Strophomena(?) ulrichi James, Paleontologist, 1, 1878, p. 6.
Rafinesquina ulrichi Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 283, pl. 15A, figs. 37, 38.
Eden: Cincinnati, Ohio, and vicinity (Economy); New York (Indian Ladder).

RAFINESQUINA UNICOSTATA Hall and Clarke. See Leptæna unicostata.

Rafinesquina winchesterensis Foerste.
Rafinesquina winchesterensis Foerste, Bull. Sci. Lab. Denison Univ., 16, 1910, p. 42, pl. 5, fig. 13a–c.
Trenton (Cynthiana): Cincinnati anticline area between Nicholas and Madison Counties, Kentucky.

Rafinesquina winchesterensis filistriata Foerste.
Rafinesquina winchesterensis—filistriata Foerste, Bull. Sci. Lab. Denison Univ., 14, 1910, pl. 5, figs. 14, 15; 16, p. 43.
Trenton (Cynthiana): Area between Nicholas and Madison Counties, Kentucky.

RAPHISTOMA Hall. Genotypes: R. staminea and R. planistria Hall.
Raphistoma Hall, Pal. New York, 1, 1847, p. 28.—Woodward, Man. Mollusca, pt. 3, 1856, p. 463.—Billings, Canadian Nat. Geol., 4, pp. 448–450.—Hall, 12th Rep. New York State Cab. Nat. Hist., 1859, p. 74.—Salter, Geol. Surv. Can-

RAPHISTOMA—Continued.

ada, dec. 1, 1859, p. 10, 11.—Meek and Worthen, Geol. Surv. Illinois, 3, 1868, p. 317.—Miller, Cincinnati Quart. Jour. Sci., p. 318.—Koninck, Ann. Mus. Royal Hist. Nat. de Belgique, 6, 1881, p. 133.—Zittel, Handb. Pal., 2, 1882, p. 207.—Miller, N. A. Geol. Pal., 1889, p. 424.—Koken, Neues Jahrb. Min., Geol. Pal., 6, Beilage-Band, 1889, p. 315; Die Leitfossilien, Leipzig, 1896, p. 102, 396.—Whidborne, Mon. Dev. Fauna South England, 3, Pal. Soc., 1896, p. 54.—Koken, Bull. de l'Acad. Imp. Sci. St. Petersburg, 7, 1897, p. 161.—Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, pp. 931–940.—Koken, Neues Jahrb. Min., Geol. Pal., 1, 1898, pp. 14–15.—Pilsbry, Zittel-Eastman Textb. Pal., 1, 1900, p. 443.—Raymond, Ann. Carnegie Mus., 4, 1908, p. 175.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 952.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 627.—Dall, Zittel-Eastman Textb. Pal., 2d ed., 1913, p. 527.

RAPHISTOMA (part) of authors. See Eotomaria and Raphistomina Ulrich and Scofield, and Eccyliopterus Remele.

Raphistoma acutum Hall and Whitfield.

Raphistoma acuta Hall and Whitfield, U. S. Geol. Expl. 40th Parl., 4, 1877, p. 235, pl. 1, figs. 20–22.

Pogonip: Ute Peak, Wahsatch Range, Utah.

Cotypes.—Cat. No. 17309, U.S.N.M.

RAPHISTOMA AFFINIS Foerste. See Liospira affinis.

RAPHISTOMA ANGULATUM Miller. See Raphistoma stamineum.

Raphistoma apertum Salter.

Raphistoma aperta Salter, Geol. Surv. Canada, dec. 1, 1859, p. 12, pl. 2, fig. 4.

Pleurotomaria aperta Billings, Geol. Canada, Geol. Surv. Canada, 1863, p. 947 (gen. ref.).

Black River (Leray): Allumette Island, Ottawa River, Canada.

Raphistoma columbianum Weller.

Raphistoma columbiana Weller, Geol. Surv. New Jersey, Pal., 3, 1903, p. 128, pl. 4, figs. 3–5.

Canadian (Beekmantown): Columbia, New Jersey.

Raphistoma compressum Whitfield.

Raphistoma compressum Whitfield, Bull. Amer. Mus. Nat. Hist., 1, 1886, p. 309, pl. 24, figs. 14, 15.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 849, figs.—Seely, Vermont State Geol., Rep. 7, 1910, pl. 62, figs. 14, 15.

Canadian (Beekmantown): Fort Cassin, Vermont.

RAPHISTOMA DECIPIENS Miller. See Liospira decipiens.

Raphistoma halli (Miller).

Pleurotomaria Halli Miller, Cincinnati Quart. Jour. Sci., 1, 1874, p. 318, fig. 34.

Raphistoma halli Miller, N. A. Geol. Pal., 1889, p. 424, fig. 707.

Maysville (Fairmount): Cincinnati, Ohio.

Raphistoma hortensia (Billings).

Pleurotomaria Hortensia Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 227, fig. 211.

Raphistoma Hortensia Whitfield, Bull. Amer. Mus. Nat. Hist., 3, 1890, p. 32, pl. 1, figs. 15, 16.

Canadian: Table Head, Newfoundland (Quebec—H); ?Fort Cassin, Vermont (Beekmantown).

Raphistoma immaturum (Billings).
Pleurotomaria immatura Billings, Canadian Nat. Geol., 4, 1859, p. 454.
Raphistoma immaturum Raymond, Ann. Carnegie Mus., 4, 1908, p. 182, fig. 2.
Chazyan: Plattsburgh and Chazy, New York (Day Point); Montreal, Quebec (Aylmer).

RAPHISTOMA LABIATUM Lesley. See Raphistoma stamineum.

RAPHISTOMA LAPICIDA Salter. See Raphistomina lapicidum.

Raphistoma leiosomellum Sardeson.
Raphistoma leiosomellum Sardeson, Bull. Minnesota Acad. Nat. Sci., 4, 1896, p. 99, pl. 5, figs. 7, 8; Jour. Geol., 11, p. 481, fig. 27.
Ozarkian (Oneota): Near Dresbach, Altura, and near Caledonia, Minnesota.

RAPHISTOMA LENTICULARIS of authors. See Liospira vitruvia.

Raphistoma lewistonense Sardeson.
Raphistoma lewistonense Sardeson, Bull. Minnesota Acad. Nat. Sci., 4, 1896, p. 99, pl. 5, figs. 9, 10.
Ozarkian (Oneota): Lewiston, Shakopee, and Cannon Falls, Minnesota.

RAPHISTOMA MICULA James. See Liospira micula.

Raphistoma minnesotense (Owen).
Straparollus (Euomphalus) minnesotensis Owen, Rep. Geol. Surv. Wisconsin, Iowa, Minnesota, 1852, p. 581, tab. 2, figs. 12, 13.
Euomphalus minnesotensis Miller, N. A. Geol. Pal., 1889, p. 404 (gen. ref.).
Straparollus minnesotensis Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1079, figs.
Raphistoma minnesotense Sardeson, Bull. Minnesota Acad. Nat. Sci., 4, 1896, p. 100, pl. 5, figs. 15–17; Jour. Geol., 11, p. 481, fig. 26.
Euomphalus? vaticinus Hall, 16th Ann. Rep. New York State Cab. Nat. Hist., 1863, p. 136, pl. 6, fig. 29; Trans. Albany Inst., 5, 1867, p. 115, pl. 1, fig. 29.
Ozarkian (Oneota): Minnesota and Iowa.

Raphistoma multivolvatum Calvin. ist., 1842, p. 312,
Raphistoma multivolvatum Calvin, Amer. Geol., 10, 1892, p g. 3.
Hist., State Univ. Iowa, p. 192. g. 78.
Ozarkian (Oneota): Northeastern Iowa. 4, fig. 20.
p. 28, pl. 6, figs. 2a–b.—Linck-

RAPHISTOMA NASONI of authors. See Eotomaria . Hist., 1861, pl. 1, fig. 8.—Miller,
.—Lesley, Geol. Surv. Pennsylvania,

Raphistoma?? niagarense Whitfield. ymond, Ann. Carnegie Mus., 4, 1908, pp.
Raphistoma Niagarense Whitfield, bau and Shimer, N. A. Index Fossils, 1, 1909, 1878, p. 82; Geol. Wisconsin,
Niagaran (Racine): Eastern Wisc, etc., New York (Day Point—Valcour); Aylmer,

Raphistoma obtusum Cleland.
Raphistoma obtusa Cleland, P mard.
ibid., 4, 1903, p. 18. mard, Trans. Acad. Sci. St. Louis, 2, 1863, p. 106.—
Canadian (Tribes Hill): F . Surv., 5, 1894, p. 163.

Raphistoma oweni Sarde zark County, Missouri.
Raphistoma oweni Sar ATA Miller. See Liospira subtilistriata.
pl. 5, fig. 18.
Ozarkian (Oneota): s White. See Polygyrata trochiscus.

Raphistoma paucivolvatum Calvin.
Raphistoma paucivolvatum Calvin, Bull. Lab. Nat. Hist. State Univ. Iowa, 2, 1892, p. 192; Amer. Geol., 10, 1892, p. 147.
Ozarkian (Oneota): Northwestern Iowa.

Raphistoma pepinense (Meek).
Euomphalus Pepinensis Meek, Proc. Acad. Nat. Sci. Philadelphia, 1870, footnote, p. 62.
Raphistoma pepinense Calvin, Amer. Geol., 10, 1892, p. 146; Bull. Lab. Nat. Hist. State Univ. Iowa, 2, 1892, p. 192.
Ozarkian (Oneota): West side Lake Pepin, Minnesota; northeastern Iowa.
Observation.—Probably the same as R. minnesotense.

Raphistoma peracutum Ulrich and Scofield.
Raphistoma peracutum Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 934, figs. d–f; p. 940, pl. 68, figs. 1–6.—Weller, Geol. Surv. New Jersey, Pal. 3, 1903, p. 180, pl. 12, figs. 22, 23.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 628, fig. 851a–d.
Black River: Goodhue County, Minnesota (Decorah); Jacksonburg, New Jersey (Jacksonburg).
Cotypes.—Cat. No. 45975, U.S.N.M.

RAPHISTOMA PLANISTRIA Hall. See Raphistoma stamineum.

RAPHISTOMA PLANISTRIA var. PARVA Hall. See Raphistoma stamineum.

RAPHISTOMA PRÆVIUM Whitfield. See Liospira prævia.

Raphistoma richmondense Ulrich.
Raphistoma richmondensis Ulrich, Geol. Minnesota, 3, pt. 2, 1897, p. 941, pl. 68, figs. 7–9.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res., Indiana, 1908, p. 972, pl. 41, figs. 6–6b.
Richmond (Whitewater): Richmond, Indiana.
Holotype.—Cat. No. 45976, U.S.N.M.

P ULIFORMIS Meek. See Polygyrata rotuliformis.
Raphistoma ro
Pleurotomaria ro s (Hall).
Emmons, Amer s Hall, Pal. New York, 1, 1847, p. 173, pl. 37, figs. 7a–c.—
Surv. Pennsylvan gy, 1, pt. 2, 1855, p. 161, pl. 6, fig. 10.—Lesley, Geol.
Raphistoma rotuloides Mi P 4, 1889, p. 715, fig.
Trenton: Middleville, New A. Geol. Pal., 1889, p. 425 (gen. ref.).

Raphistoma ruidum Sardeson.
Raphistoma ruidum Sardeson, Bull. Min
5, figs. 13, 14. a Acad. Nat. Sci., 4, 1896, p. 101, pl.
Canadian (Shakopee): Near Argyle, Wisc
Minnesota. ; Shakopee and Cannon Falls,

Raphistoma stamineum (Hall).
Raphistoma staminea Hall, Pal. New York, 1, 1
Billings, Canadian Nat. Geol., 1, 1856, p. 318, p. 29, pl. 6, figs. 4, 5, 5a.—
sylvania, 2, pt. 2, 1858, p. 817, fig. 594.—Lin 6, 7.—Rogers, Geol. Penn-
State Cab. Nat. Hist., 1861, pl. 1, fig. 2.—Lesley en, 14th Rep. New York
Rep. P 4, 1889, p. 851, figs.—Raymond, Ann. Car ol. Surv. Pennsylvania,
pl. 47, figs. 11–13; pl. 48, figs. 1–6; pl. 55, figs. 5 e Mus., 4, 1908, p. 180,
N. A. Index Fossils, 1, 1909, p. 628, figs. 848a, b, 84 —Grabau and Shimer,

aphistoma stamineum—Continued.

Scalites stamineus D'Orbigny, Prodr. de Pal., 1, 1849, p. 7 (gen. ref.).—Pictet, Traité de Pal., 2d ed., 3, 1855, p. 163, pl. 62, fig. 26.—Emmons, Amer. Geology, 1, 1855, p. 159.

Raphistoma planistria Hall, Pal. New York, 1, 1847, p. 29, figs. 1, 2; pl. 6, figs. 3a, b.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 628.

Scalites planistria D'Orbigny, Prodr. de Pal., 1, 1849, p. 7 (gen. ref.).—Emmons, Amer. Geology, 1, 1855, p. 159, pl. 4, figs. 16, 17.

Straparollus planistria Emmons, Amer. Geology, 1, 1855, p. 233.

Raphistoma planistria var. parva Hall, Pal. New York, 1, 1847, p. 30, pl. 6, figs. 3c–e.—Raymond, Ann. Carnegie Mus., 4, 1908, p. 176.

Pleurotomaria sp. Hall, Pal. New York, 1, 1847, p. 31, pl. 6, fig. 8.

Pleurotomaria calyx Billings, Canadian Nat. Geol., 4, 1859, p. 455, figs. 30, 31, 32; Geol. Canada, Geol. Surv. Canada, 1863, p. 132, fig. 62a–c.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 705; figs.—Raymond, Ann. Carnegie Mus., 4, 1908, p. 177.

Straparollus angulatus Emmons, Amer. Geology, 1, pt. 2, 1855, p. 157.

Raphistoma angulatum Miller, N. A. Geol. Pal., 1889, p. 424 (gen. ref.).

Pleurotomaria crevieri Billings, Canadian Nat. Geol., 4, 1859, p. 456, figs. 33–35.—Raymond, Ann. Carnegie Mus., 4, 1908, p. 177.

Pleurotomaria pauper Billings, Canadian Nat. Geol., 4, 1859, p. 457.—Raymond, Ann. Carnegie Mus., 4, 1908, p. 177.

Maclurea labiatus Emmons, Geol. New York, 2, 1842, p. 312, fig. 2.—Owen, Amer. Jour. Sci. Arts, 47, 1844, p. 359, fig. 2.

Raphistoma labiatum Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 850, figs.

Straparollus labiatus Emmons, Amer. Geology, 1, pt. 2, 1855, p. 157, pl. 4, fig. 2.—Emmons, Man. Geology, 1860, p. 93, fig. 78.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 1079, figs.

Chazyan (Day Point—Valcour): Chazy, Crown Point, Valcour, etc., New York; Isle La Motte, Vermont; various localities in Canada; East Tennessee.

Plesiotypes.—Cat. No. 53634, U.S.N.M. (Raymond).

Raphistoma striatum (Emmons).

Maclurea striata Emmons, Geol. Surv. New York, Rep. 2d Dist., 1842, p. 312, fig. 3.—Owen, Amer. Jour. Sci. Arts, 47, 1844, p. 358, fig. 3.

Straparollus striatus Emmons, Man. Geol., 1860, p. 93, fig. 78.

Scalites striata Emmons, Amer. Geology, 1, 1855, pl. 4, fig. 20.

Raphistoma striata Hall, Pal. New York, 1, 1847, p. 28, pl. 6, figs. 2a–b.—Lincklaen, 14th Rep. New York State Cab. Nat. Hist., 1861, pl. 1, fig. 8.—Miller, N. A. Geol. Pal., 1889, p. 425, fig. 709.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 851, fig.—Raymond, Ann. Carnegie Mus., 4, 1908, pp. 176, 178, pl. 47, figs. 4–10.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 627, fig. 848c, d.

Chazyan: Chazy, Valcour Island, etc., New York (Day Point—Valcour); Aylmer, etc., Quebec (Aylmer).

Raphistoma subplanum Shumard.

Raphistoma subplana Shumard, Trans. Acad. Sci. St. Louis, 2, 1863, p. 106.—Keyes, Missouri Geol. Surv., 5, 1894, p. 163.

Canadian (Yellville): Ozark County, Missouri.

RAPHISTOMA SUBTILISTRIATA Miller. See Liospira subtilistriata.

RAPHISTOMA TROCHISCUS White. See Polygyrata trochiscus.

RAPHISTOMINA Ulrich and Scofield. Genotype: Raphistoma lapicida Salter.
Raphistomina Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, pp. 932-941.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 629.

Raphistomina denticulata Ulrich.
Raphistoma denticulata Ulrich, Geol. Minnesota, 3, pt. 2, 1897, p. 943, pl. 68, figs. 21–23.
Trenton (Curdsville): Mercer County, Kentucky.
Cotypes.—Cat. No. 45977, U.S.N.M.

Raphistomina lapicida (Salter).
Raphistoma lapicida Salter, Geol. Surv. Canada, Canadian Org. Rem., dec. 1, 1859, p. 12, pl. 2, figs. 1–3.
Raphistomina lapicida Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 934, figs. 5a–c; p. 942, pl. 68, figs. 18–20.—Grabau and Shimer, N. A. Index Fossils, 1, p. 629, fig. 851e–g.
Black River: Allumette Island, Ottawa River, Canada (Leray); near Lebanon, Tennessee.
Plesiotype.—Cat. No. 45978, U.S.N.M.

Raphistomina laurentina (Billings).
Pleurotomaria Laurentina Billings, Canadian Nat. Geol., 4, 1859, p. 354, fig. 6; Geol. Canada, Geol. Surv. Canada, 1863, p. 117, fig. 28a–c (not d=Pleurotomaria canadensis).—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 711, figs.
Raphistoma Laurentina Whitfield, Bull. Amer. Mus. Nat. Hist., 2, 1889, p. 42 (loc. occ.).
Raphistomina laurentina Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1894, p. 942 (gen. ref.).
Canadian (Romaine): Mingan Islands, Canada.

Raphistomina modesta Ulrich.
Raphistomina modesta Ulrich, Geol. Minnesota, 3, pt. 2, 1897, p. 943, pl. 68, figs. 14–17.
Stones River (Murfreesboro): Near Murfreesboro, Tennessee.
Holotype.—Cat. No. 46071, U.S.N.M.

Raphistomina rugata Ulrich and Scofield.
Raphistomina rugata Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, pl. 68, figs. 10–13.
Trenton (Prosser): Goodhue County, Minnesota.
Holotype.—Cat. No. 45979, U.S.N.M.

Raphistomina undulata Raymond.
Raphistomina undulatum Raymond, Ann. Carnegie Mus., 3, 1906, p. 576; ibid., 4, 1908, p. 183, pl. 48, figs. 7–10.
Chazyan (Crown Point): Sloop Bay, Valcour Island, New York.

RASTRITES BARRANDI Hall. See Thamnograptus capillaris.

RASTRITES BARRANDI Harkness. See Nemagraptus gracilis.

RASTRITES URCEOLUS Eisel. See Monograptus urceolus.

RAUFFELLA Ulrich. Genotype: R. filosa Ulrich.
Rauffella Ulrich, Amer. Geol., 3, 1889, pp. 234–235.—Miller, N. A. Geol. Pal., p. 163.—Winchell and Schuchert, Geol. Minnesota, 3, pt. 1, 1895, p. 75, pl. F, figs. 16–20 (ext., 1893).—Ulrich, Harriman Alaska Expedition, 4, 1904, p. 129.

Rauffella filosa Ulrich.

Rauffella filosa Ulrich, Amer. Geol., 3, 1889, p. 237, figs. 1, 2, 4, p. 236.—Winchell and Schuchert, Geol. Minnesota, 3, pt. 1, 1895, p. 75, pl. F, figs. 16-18.

Black River (Decorah): Minneapolis, St. Paul, Fountain, etc., Minnesota; Decorah, Iowa.

Cotypes.—Cat. Nos. 46567, 46568, U.S.N.M.

Rauffella? fucoida Sardeson.

Rauffella? fucoida Sardeson, Bull. Minnesota Acad. Nat. Sci., 4, 1896, p. 78, pl. 4, figs. 5, 6.

St. Peter: Fountain, Minnesota.

Rauffella palmipes Ulrich.

Rauffella palmipes Ulrich, Amer. Geol., 3, 1889, p. 238, fig. 3, on. p. 236.—Winchell and Schuchert, Geol. Minnesota, 3, pt. 1, 1895, p. 76, pl. F, figs. 19, 20 (ext., 1893).

Black River (Decorah): Minneapolis and St. Paul, Minnesota.

Cotypes.—Cat. No. 46569, U.S.N.M.

RECEPTACULITES Defrance. Genotype: P. neptuni Defrance.

Receptaculites Defrance, Dict. Sci. Nat., 45, 1827, p. 5, atlas, pl. 68.—Dana, Wilkes' U. S. Expl. Exped., 7, 1846, Zoophytes, p. 700.—Salter, Canadian Org. Rem., Geol. Surv. Canada, dec. 1, 1859, p. 43.—Eichwald, Lethaea Rossica, 1860, p. 427.—Hall, Rep. Supt. Geol. Surv. Wisconsin, 1861, p. 13; 16th Rep. New York State Cab. Nat. Hist., 1863, pp. 67-69.—Billings (part), Pal. Foss., 1, Geol. Surv. Canada, 1865, pp. 378-388, figs. 353-357; Canadian Nat. Geol., 2d ser., 2, 1865, pp. 184-195, figs. 1-5.—Winchell and Marcy, Mem. Boston Soc. Nat. Hist., 1, 1865, p. 86.—Dames, Zeits. d. d. geol. Gesell., 20, 1868, p. 483.—Kayser, ibid., 27, 1875, p. 781.—Gumbel, Anhandl. d. k. bayer Akad. d. Wissench., 12, 1875, p. 170.—Zittel, Handb. Pal., 1, 1876, p. 83.—Roemer, Leth. Pal., 1876, p. 285; ibid., 1880, p. 286.—Jones, Cat. Foss. Foraminifera British Mus., 1882, p. 83.—Hinde, Quart. Jour. Geol. Soc. London, 40, 1884, p. 821.—James, Jour. Cincinnati Soc. Nat. Hist., 8, 1885, p. 163; ibid., 9, 1886, pp. 246, 249.—Schluter, Zeits. d. d. geol. Gesell., 39, 1887, p. 1.—Rauff, ibid., 40, 1888, p. 606.—Nicholson, Manual Pal., 1, 1889, p. 170, figs. 61a-d; 2, p. 1563.—Miller, N. A. Geol. Pal., 1889, pl. 163.—James, Jour. Cincinnati Soc. Nat. Hist., 14, 1891, pp. 60-62.—Rauff, Abh. d. math.-phys. Classe. d. k. bayer Akad. d. Wiss., 17, 3, 1892, p. 654.—Winchell and Schuchert, Geol. Minnesota, 3, pt. 1, 1895, p. 56, pl. F, figs. 1-4 (extr., 1893).—Whitfield, Mem. Amer. Mus. Nat. Hist., 1, pt. 2, 1895, p. 43.—Dawson, Canadian Rec. Sci., 7, 1896, p. 214.—Grabau and Shimer, N. A. Index Fossils, 1, 1906, p. 18; Zittel-Eastman Textb. Pal., 2d ed., 1913, p. 72.

Dictuocrinites Conrad, figured on pl. intended to accompany Geol. Rep. New York, 1841.—Hall, 15th Rep. New York State Cab. Nat. Hist., 1862, pl. 11, fig. 22.

Dictyocrinites (Conrad MS) Hall, Pal. New York, 3, for 1859, 1861, pp. 135, 148.—Winchell and Marcy, Mem. Boston Soc. Nat. Hist., 1, 1865, p. 86.—Bather, Treatise on Zool. (Lankester), pt. 3, 1900, p. 77 (Genotype: D. squamifer Conrad).

Dictyocrinus (Dictuocrinites) Shumard, Trans. Acad. Sci. St. Louis, 2, 1866, p. 367.

Receptaculites arcticus Etheridge.

Receptaculites arcticus Etheridge, Quart. Jour. Geol. Soc. London, 34, 1878, p. 576.—Jones, Cat. Foss. Foram. British. Mus., 1882, p. 3.—Hinde, Quart.

Receptaculites arcticus—Continued.
Jour. Geol. Soc. London, 40, 1884, p. 845.—Winchell and Schuchert, Geol. Minnesota, 3, pt. 1, 1895, p. 59 (extras, 1893).
Ordovician: Cape Louis Napoleon and Cape Frazer, Arctic America.

Receptaculites biconstrictus Ulrich.
Receptaculites biconstrictus (Ulrich MS) Bassler, Bull. Virginia Geol. Surv., 2a, 1909, pl. 21, figs. 4, 5.
Chazyan (Ottosee): Speer Ferry, Virginia, southward to Knoxville, Tennessee.
Cotypes.—Cat. No. 49578, U.S.N.M.

Receptaculites calciferus Billings.
Receptaculites calciferus Billings, Canadian Nat. Geol., 2d ser., 2, 1865, p. 190, text. fig. 6; Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 359, fig. 346; p. 834, fig. 358.—Hinde, Quart. Jour. Geol. Soc. London, 40, p. 845.—Winchell and Schuchert, Geol. Minnesota, 3, pt. 1, 1895, p. 60 (extr., 1893).
Canadian (Romaine): Mingan Islands, Quebec.

RECEPTACULITES CANADENSIS Billings. See Ischadites canadensis.

RECEPTACULITES CIRCULARIS Emmons. See Ischadites circularis.

RECEPTACULITES DICKHAUTI James. See Lepidolites dickhauti.

Receptaculites dixonensis Miller and Gurley.
Receptaculites dixonensis Miller and Gurley, Bull. Illinois State Mus. Nat. Hist., 11, 1896, p. 47, pl. 5, figs. 21, 22.—Miller, N. A. Geol. Pal., 2d App., 1897, p. 723 figs. 1267–1268.
Trenton (Galena): Near Dixon, Illinois.

Receptaculites? elegantulus Billings.
Receptaculites? elegantulus Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 360, fig. 347.—Winchell and Schuchert, Geol. Minnesota, 3, pt. 1, Pal., 1895, p. 61 (extras, 1893).
Canadian (Romaine): Mingan Islands, Quebec.

Receptaculites ellipticus Walcott.
Receptaculites ellipticus Walcott, Mon. U. S. Geol. Surv., 8, 1884, p. 67, pl. 11, fig. 12.—Winchell and Schuchert, Geol. Minnesota, 3, pt. 1, Pal., 1895, p. 60 (extr., 1893).
Upper Pogonip: White Mountain, Eureka District, Nevada.
Holotype.—Cat. No. 24548, U.S.N.M.

Receptaculites elongatus Walcott.
Receptaculites elongatus Walcott, Mon. U. S. Geol. Surv., 8, 1884, p. 66.—Winchell and Schuchert, Geol. Minnesota, 3, pt. 1, Pal., 1895, p. 60.
Upper Pogonip: White Pine District, Nevada.
Cotypes.—Cat. No. 24635, U.S.N.M.

RECEPTACULITES FORMOSUS Meek and Worthen. See Receptaculites tessellatus.

RECEPTACULITES FUNGOSUM Hall. See Ischadites iowensis.

RECEPTACULITES GLOBULARE Hall. See Ischadites iowensis.

Receptaculites hemisphericus (Hall).
Receptaculites hemisphericum Hall, Rep. Supt. Geol. Surv. Wisconsin, 1861, p. 16.—Whitfield, Geol. Wisconsin, 4, 1882, p. 269, pl. 13, fig. 4; Mem. Amer. Mus. Nat. Hist., 1, pt. 2, 1895, p. 46, pl. 5, figs. 3, 4.—Grabau and Shimer, N. A. Index Fossils, 1, 1906, p. 19.

Receptaculites hemisphericus—Continued.
Ischadites koenigii (part) Hinde, Quart. Jour. Geol. Soc. London, 40, 1884, p. 836.
Ischadites hemisphericus Winchell and Schuchert, Geol. Minnesota, 3, pt. 1, 1895, p. 66 (extr., 1893).
Niagaran (Racine): Racine and Waukesha, Wisconsin.

RECEPTACULITES INFUNDIBULUM Hall. See Receptaculites tessellatus

RECEPTACULITES? INSULARIS Billings. See Ischadites insularis.

RECEPTACULITES IOWENSIS Billings. See Ischadites iowensis.

Receptaculites mammillaris Walcott.
Receptaculites mammillaris Walcott, Mon. U. S. Geol. Surv., 8, 1884, p. 65, pl. 11, fig. 11.—Winchell and Schuchert, Geol. Minnesota, 3, pt. 1, 1895, p. 60.—Grabau and Shimer, N. A. Index Fossils, 1, 1906, p. 19.
Upper Pogonip: Eureka and White Pine Districts, Nevada.
Cotypes.—Cat. No. 24636, U.S.N.M.

RECEPTACULITES NEPTUNI Hall. See Receptaculites occidentalis.

Receptaculites occidentalis Salter.
Receptaculites neptuni Hall (not Defrance), Pal. New York, 1, 1847, p. 68, pl. 24, figs. 3a–3d.—Emmons, Amer. Geol., pt. 2, 1855, p. 230, pl. 14, fig. 1.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 853, figs.—Girty, 48th Rep. New York State Mus., 2, 1897, p. 287; 14th Rep. State Geol. New York, 1894, p. 287.
Receptaculites occidentalis Salter, Canadian Org. Rem. Geol. Surv. Canada, dec. 1, 1859, p. 45, pl. 10, figs. 1–7.—Billings, Geol. Canada, 1863, p. 937.—Hall, 16th Ann. Rep. New York State Cab. Nat. Hist., 1863, p. 69.—Billings, Pal. Foss. Geol. Surv. Canada, 1, 1865, p. 381, figs. 354–356; Canadian Nat. Geol., 2d ser., 2, 1865, p. 187, figs. 2–4.—Gumbel, Abh. d. Math.-Phys. Classe, d. k. Bay. Akad. d. Wiss., 12, 1, Abth., 1875, p. 173.—Etheridge, Quart. Jour. Geol. Soc. London, 34, 1875, p. 577.—Hinde, Quart. Jour. Geol. Soc. London, 40, 1884, p. 842, pl. 37, figs. 3, 3a–m.—Miller, N. A. Geol. Pal., 1889, p. 164, figs. 119–121.—Winchell and Schuchert, Geol. Minnesota, 3, pt. 1, Pal., 1895, p. 60 (extr., 1893).—Weller, Geol. Surv. New Jersey Pal., 3, 1903, p. 135, pl. 6, figs. 2–4.
Black River: Pauquettes Rapids, Ottawa River, Canada (Leray); near High Bridge, Kentucky; ?Carlisle, Pennsylvania; New Jersey; Cape Louis Napoleon, Arctic America.

RECEPTACULITES OCCIDENTALIS Hinde (part). See Receptaculites oweni.

Receptaculites ohioensis Hall and Whitfield.
Receptaculites Ohioensis Hall and Whitfield, Geol. Surv. Ohio, Pal., 2, 1875, p. 123, pl. 6, fig. 1.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 854, fig.—Grabau and Shimer, N. A. Index Fossils, 1, 1906, p. 19, fig. 29.
Niagaran: Yellow Springs, Ohio.

Receptaculites oweni Hall.
Coscinopora sulcata Owen (not Goldfuss), Geol. Rep. of Iowa, Wisconsin, and Illinois, 1884, p. 40, pl. 7, fig. 5.
Receptaculites oweni Hall, Rep. Supt. Geol. Surv. Wisconsin, 1861, p. 11–13; Geol. Rep. Wisconsin, 1862, p. 46, fig. 2, and p. 429.—Meek and Worthen, Geol. Surv. Illinois, 3, 1868, p. 302, pl. 2, fig. 3.—Whitfield, Geol. Wisconsin, 4, 1882, p. 239, pl. 10, fig. 7.—Hall, 12th Rep. State Geol. of Indiana, 1883,

Receptaculites oweni—Continued.
p. 243, pl. 1, fig. 1; p. 246, text figs. 1–3.—Winchell and Schuchert, Geol. Minnesota, 3, pt. 1, 1893, p. 57, pl. F, figs. 1–4.—Hall, 16th Ann. Rep. New York State Cab. Nat. Hist., 1863, p. 69.—Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 384, fig. 359; Canadian Nat. Geol., n. s., 2, 1865, p. 189, fig. 7.—Whiteaves, Geol. Surv. Canada, Rep. Progr. for 1878–1879, 1880, p. 45c.—Chamberlin, Geol. Wisconsin, 1, 1883, p. 166, fig.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 854, fig.—Keyes, Missouri Geol. Surv., 4, 1894, p. 103, pl. 12, figs. 2a, b.—Girty, 14th Rep. State Geol. New York for 1894, 1897, p. 284, pl. 6, figs. 1–4; 48th Rep. New York State Mus., 2, for 1895, 1897, p. 284, pl. 6, figs. 1–4.—Whitfield, Mem. Amer. Mus. Nat. Hist., 1, pt. 2, 1895, p. 44, pl. 5, figs. 8–11.—Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 3, 1897, p. 142.—Schuchert, Proc. U. S. Nat. Mus., 22, 1900, p. 152.—Grabau and Shimer, N. A. Index Fossils, 1, 1906, p. 18, fig. 28.—Holtedahl, Vidensk. Skrifter, 1, No. 9, 1912, p. 4, pl. 1, figs. 1, 2; pl. 4, fig. 3.
Receptaculites occidentalis (part) Hinde, Quart. Jour. Geol. Soc. London, 40, 1884, p. 842.
Black River and Trenton: Wisconsin; Illinois; Iowa; Missouri; Minnesota; Manitoba; Arctic America.
Plesiotype.—Cat. No. 56616, U.S.N.M. (Meek and Worthen).

Receptaculites pearyi Whitfield.
Receptaculites pearyi Whitfield, Bull. Amer. Mus. Nat. Hist., 13, 1900, p. 13, pl. 1, fig. 1.
Niagaran: Cope Bay, Princess Marie Bay, Greenland.

RECEPTACULITES RETICULATUS James. See Anomaloides reticulata.

RECEPTACULITES RETICULATUS Hall. See Ischadites iowensis.

Receptaculites? sacculus Hall.
Receptaculites sacculus Hall, 11th Rep. State Geol. Indiana, 1882, p. 222, pl. 1, fig. 5; Trans. Albany Inst., 10, 1883, p. 57.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 855, figs.—Winchell and Schuchert, Geol. Minnesota, 3, pt. 1, 1895, p. 61 (extras, 1893).
Niagaran (Waldron): Waldron, Indiana.

RECEPTACULITES SUBTURBINATUS Hall. See Ischadites subturbinatus.

Receptaculites tessellatus (Winchell and Marcy).
Ischadites tessellatus Winchell and Marcy, Mem. Boston Soc. Nat. Hist., 1, 1865, p. 85, pl. 2, fig. 3.—Hall, 20th Rep. New York State Cab. Nat. Hist., 1867, pp. 390–395.—Hinde, Quart. Jour. Geol. Soc. London, 40, 1884, p. 839.—Winchell and Schuchert, Geol. Minnesota, 3, pt. 1, 1895, p. 66.
Receptaculites infundibulum Hall, Rep. Sup. Geol. Surv. Wisconsin, 1861, p. 16.—Whitfield, Mem. Amer. Mus. Nat. Hist., 1, pt. 2, 1895, p. 46, pl. 5, figs. 1, 2.
Receptaculites formosus Meek and Worthen, Proc. Acad. Nat. Sci. Philadelphia, 1870, p. 22; Geol. Surv. Illinois, 4, 1875, p. 500, pl. 24, fig. 1.
Niagaran (Racine): Bridgeport, Illinois; Racine, Wisconsin.

REMOPLEURIDES Portlock. Genotype: Remopleurides colbii Portlock.
Remopleurides Portlock, Geol. Rep. Londonderry, 1843, p. 254.—Emmrich, Neues Jahrb. f. Min., etc., 1845, p. 45.—Hawle and Corda, Abh. d. k. böhmischen Gesell. d. Wiss., 5, (Extract), 1847, pp. 111, 113, pl. 6, fig. 59.—Barrande, Neues Jahrb. Min., Geol. Pal., 1850, p. 777.—Angelin, Pal. Scandinavica, 3d ed., Holmiae, 1852, p. 13.—Barrande, Syst. Sil. du Centre

REMOPLEURIDES—Continued.

Boheme, 1, 1852, p. 356, pl. 45.—Salter, Mem. Geol. Surv. United Kingdom, dec. 7, 1853, pl. 8, Rep. 22d Meeting British Assoc. Adv. Sci., Notes and Abstracts, 1853, p. 60.—Pictet, Traite de Pal., 2d ed., 2, 1854, p. 488.—Nicholson and Etheridge, Mon. Sil. Foss. Girvan Dist., 1880, p. 145.—Zittel, Handb. Pal., 2, 1885, p. 599.—Miller, N. A. Geol. Pal., 1889, p. 565.—Schmidt, Mem. l'Acad. Imp. Sci. St. Petersburg, 7th ser., 47, 1894, p. 87.—Krause, Jahrb. d. Konig. Preuss. geol. Landesanst. u. Berg-akad. for 1894, 1895, p. 109.—Koken, Die Leitfossilien, Leipzig, 1896, p. 15.—Beecher, Zittel-Eastman Textb. Pal., 1, 1900, p. 628.—Lindstrom, Kongl. Sven. Vet.-Akad. Handl., 34, No. 8, 1901, p. 16.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 270.—Raymond, Zittel-Eastman Textb. Pal., 1913, p. 717.

Remopleurides affinis Billings.

Remopleurides affinis Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 325, fig. 313.

Canadian (Beekmantown): Stanbridge, Quebec.

Remopleurides canadensis Billings.

Remopleurides canadensis Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 182, fig. 164.—Raymond, Ann. Carnegie Mus., 3, 1905, p. 334, pl. 10, figs. 8–10; p. 366, fig. 9.—Bassler, Bull. Virginia Geol. Surv., 2A, 1909, p. 111, fig. 10.—Raymond, Ann. Carnegie Mus., 7, 1910, p. 60; 7th Rep. Vermont State Geol., 1910, p. 217, pl. 32, figs. 8–10.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 270, fig. 1564.

Chazyan: Township of Clarence, etc., Quebec; Chazy, Valcour Island, etc., New York (Crown Point); Lexington, Virginia (Liberty Hall).

REMOPLEURIDES LINGUALIS Grabau and Shimer. See Remopleurides linguatus.

Remopleurides linguatus Ruedemann.

Remopleurides (Caphyra) linguatus Ruedemann, Bull. New York State Mus., 49, 1901, p. 56, pl. 3, figs. 21–29.

Remopleurides lingualis Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 270, fig. 1565.

Mohawkian (Rysedorph): Rysedorph Hill, Rensselaer County, New York.

REMOPLEURIDES MAGNIFICUS Billings. See Hungaia magnifica.

Remopleurides panderi Billings.

Remopleurides Panderi Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 293, fig. 283.

Chazyan (Quebec—N.): Table Head, Newfoundland.

Remopleurides schlotheimi Billings.

Remopleurides? Schlotheimi Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 284, fig. 284a, b.

Apatokephalus Schlotheimi Brögger, Nyt Mag. f. Naturvid., 36, 1897, p. 175, fig. 8a, b; p. 184.

Chazyan (Quebec—N, P.): Table Head, Pistolet Bay, and near Portland Creek, Newfoundland.

Remopleurides striatulus Walcott.

Remopleurides striatulus Walcott, Cincinnati Quart. Jour. Sci., 2, 1875, p. 347, fig. 27A, a, b.—Miller, N. A. Geol. Pal., p. 566, fig. 1054.

Trenton: Trenton Falls, New York.

Remopleurides tumidus Ruedemann.

Remopleurides tumidus Ruedemann, Bull. New York State Mus., 49, 1901, p 54, pl. 4, figs. 2–4.

Mohawkian (Rysedorph): Rysedorph Hill, Rensselaer County, New York.

RENSSELÆRIA Hall. Genotype: Terebratula ovoides Eaton

Rensselæria Hall, 12th Rep. New York State Cab. Nat. Hist., 1859, p. 39; Pal New York, 3, 1859, p. 454.—Dall, Amer. Jour. Conch., 6, 1870, p. 105.—Claypole, Proc. Amer. Philos. Soc., 1883, p. 235.—Hall and Clarke, Pal. New York, 8, pt. 2, 1893, p. 255; 13th Ann. Rep. New York State Geol., 1895, p. 849.

Rensselæria keyserensis Swartz.

Rensselæria keyserensis Swartz, Maryland Geol. Surv., Low. Dev., 1913, p. 384, pl. 66, figs. 26–28.

Helderbergian (Keyser): Three-fourths mile southwest of Rawlings, Maryland.

Rensselæria mutabilis (Hall).

Meganteris mutabilis Hall, 10th Ann. Rep. New York State Cab. Nat. Hist., 1857, p. 97.

Rensselæria mutabilis Hall, Pal. New York, 3, 1859, p. 254, pl. 45, figs. 2a-2p.—Schuchert and Maynard, Maryland Geol. Surv., Low. Dev., 1913, p. 378, pl. 66, figs. 5, 6.

Helderbergian: Albany County, New York (New Scotland): Keyser, West Virginia; near Cumberland, Corriganville, and Tonoloway, Maryland (Keyser)

Rensselæria (Beachia) proavita Schuchert.

Rensselæria (Beachia) proavita Schuchert and Maynard, Maryland Geol. Surv., Low Dev., 1913, p. 385, pl. 67, figs. 1–3.

Helderbergian (Keyser): Pinto, Maryland; New Bloomfield, Pennsylvania.

RETEOCRINUS Billings. Genotype: R. stellaris Billings

Reteocrinus Billings, Geol. Surv. Canada, dec. 4, 1859, p. 63.—Wetherby, Jour. Cincinnati Soc. Nat. Hist., 4, 1881, p. 83.—Wachsmuth and Springer, Proc. Acad. Nat. Sci. Philadelphia, 1881, p. 365 (Rev. Pal., pt. 2, p. 191); ibid., 1887, p. 105; 1890, pp. 353–390.—Miller, Jour. Cincinnati Soc. Nat. Hist., 5, 1882, p. 36.—Wachsmuth and Springer, Amer. Jour. Sci., 3d ser., 25, 1883, p. 255.—Miller, Amer. Jour. Sci., 1883, pp. 105, 113.—Carpenter, Phil. Trans. Royal Soc. London, 174, 1884, pp. 923, 924, 927, 930; Proc. Royal Soc. London, 35, 1883, p. 139.—Miller, N. A. Geol. Pal., 1889, p. 277.—James, Jour. Cincinnati Soc. Nat. Hist., 19, 1897, pp. 101, 102.—Wachsmuth and Springer, Mem. Mus. Comp. Zool., Harvard, 20, 1897, p. 176.—Bather, Treatise on Zool., pt. 3, Echinoderma, London, 1900, p. 198.—Wachsmuth, Zittel-Eastman Textb. Pal., 1, 1900, p. 144.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 546.—Springer, Geol. Surv. Canada, Mem. 15P, 191, p. 9; Zittel-Eastman Textb. Pal., 2d ed., 1913, p. 186.

Gaurocrinus Miller, Jour. Cincinnati Soc. Nat. Hist., 6, 1883, p 219-228.—Carpenter, Phil. Trans. Royal Soc. London, 174, 1884, p. 932.—M ler, N. A. Geol. Pal., 1889, p. 246.—Bather, Treatise on Zool., pt. 3, Echi derma, London, 1900, p. 203. (Genotype: Glyptocrinus nealli Hall.)

Reteocrinus alveolatus Miller and Gurley.

Reteocrinus alveolatus Miller and Gurley, Bull. Illinois State Mus. Nat. 1894, p. 26, pl. 2, fig. 22.—Miller, N. A. Geol. Pal., 2d App., 1897, fig. 1390.—Springer, Geol. Surv. Canada, Mem. 15P, 1911, p. 10, pl. 1, fi

Trenton (Curdsville): Mercer County, Kentucky; Kirkfield, Ontario.

RETEOCRINUS BAERI Miller. See Xenocrinus baeri.

RETEOCRINUS COGNATUS Wachsmuth and Springer. See Reteocrinus nealli.

Reteocrinus fimbriatus Billings.
Reteocrinus? fimbriatus Billings, Geol. Surv. Canada, dec. 4, 1859, p. 65, pl. 9, figs. 3a–c; Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 8 (loc. ref.).—Wachsmuth and Springer, Amer. Jour. Sci., 25, 1893, p. 266; Mem. Mus. Comp. Zool., Harvard, 1897, p. 179, pl. 9, fig. 4.
Richmond (Charleton): Charleton Point, Anticosti.

RETEOCRINUS GRACILIS Wetherby. See Ptychocrinus parvus.

Reteocrinus magnificus Miller.
Gaurocrinus magnificus Miller, Jour. Cicinnati Soc. Nat. Hist., 6, 1883, p. 230, pl. 11, fig. 2.
Reteocrinus magnificus Wachsmuth and Springer, Proc. Acad. Nat. Sci. Philadelphia, p. 316 (Rev. Pal., pt. 3, sec. i, 1885, p. 94).—James, Jour. Cincinnati Soc. Nat. Hist., 19, 1897, p. 104.—Wachsmuth and Springer, Mem. Mus. Comp. Zool., Harvard, 20, 1897, p. 181, pl. 9, fig. 2.
Richmond (Waynesville): Warren County, Ohio.
Plesiotype.—Cat. No. 40757, U.S.N.M.

Reteocrinus nealli (Hall).
Glyptocrinus Nealli Hall, 24th Rep. New York State Cab. Nat. Hist., 1872, p. 206, pl. 5, figs. 18, 19 (separates, 1886, p. 2, and 1871, pl. 1, figs. 18, 19).—Meek, Geol. Surv. Ohio, Pal., 1, 1873, p. 34, pl. 2, figs. 3a–c.—Hall, 11th Ann. Rep. Indiana Dep. Geol. Nat. Hist., 1882, p. 260, fig. 1.—Miller, Jour. Cincinnati Soc. Nat. Hist., 5, 1882, p. 37.—Carpenter, Phil. Trans. Royal Soc. London, 174, 1884, p. 931.—Dyche, Jour. Cincinnati Soc. Nat. Hist., 15, 1892, p. 101.
Gaurocrinus nealli Miller, Jour. Cincinnati Soc. Nat. Hist., 6, 1883, p. 228; N. A. Geol. Pal., 1889, p. 246, figs. 309, 310.
Reteocrinus O'Nealli Wachsmuth and Springer, Proc. Acad. Nat. Sci. Philadelphia, 1881, p. 367 (Rev. Pal., pt. 2, p. 193); Amer. Jour. Sci., 25, 1883, p. 260.—James, Jour. Cincinnati Soc. Nat. Hist., 19, 1897, p. 102.—Bather, Treatise on Zool., pt. 3, Echinoderma, London, 1900, p. 199, fig. 122.—Wachsmuth and Springer, Mem. Mus. Comp. Zool., Harvard, 20, 1897, p. 174, fig. 6.—Springer, ibid., 25, 1905, pl. 1, figs. 14–21.
Glyptocrinus cognatus Miller, Jour. Cincinnati Soc. Nat. Hist., 4, 1881, p. 75, pl. 1, figs. 5, 5a.
Gaurocrinus cognatus Miller, ibid., 6, 1883, p. 229.
Reteocrinus cognatus Wachsmuth and Springer, Proc. Acad. Nat. Sci. Philadelphia, 1881, p. 367 (Rev. Pal., pt. 2, p. 193).—James, Jour. Cincinnati Soc. Nat. Hist., 1897, 19, p. 103.
Richmond (Waynesville-Liberty): Lebanon, etc., Ohio.
Cotype and *plesiotype*.—Cat. Nos. 40756, 42145, U.S.N.M.

RETEOCRINUS O'NEALLI Wachsmuth and Springer. See Reteocrinus nealli.

RETEOCRINUS PATTERSONI Wachsmuth and Springer. See Glyptocrinus pattersoni.

RETEOCRINUS RICHARDSONI Wachsmuth and Springer. See Glyptocrinus richardsoni.

Reteocrinus stellaris Billings.
Reteocrinus stellaris Billings, Geol. Surv. Canada, dec. 4, 1859, p. 64, pl. 9, figs. 4a–c.—Wachsmuth and Springer, Amer. Jour. Sci., 3d ser., 25, 1883, p. 261, figs. 1–3.—Carpenter, Phil. Trans. Royal Soc. London, 174, 1884, p. 931.—

Reteocrinus stellaris—Continued.

Miller, N. A. Geol. Pal., 1889, p. 277, fig. 416.—Wachsmuth and Springer, Mem. Mus. Comp. Zool., Harvard, 20, 1897, p. 178, pl. 9, figs. 3a–c.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 547.—Springer, Mem. Geol. Surv. Canada, 15P, 1911, p. 10, pl. 1, figs. 6, 7.

Trenton (Curdsville): Ottawa, Ontario.

RETEOCRINUS SUBGLOBOSUS Wachsmuth and Springer. See Glyptocrinus subglobosus.

RETEOGRAPTUS Hall. See Retiograptus Hall.

RETEPORA of authors (not Lamarck, 1801). See Chasmatopora Eichwald.

Retepora clintonii Vanuxem. Not defined.

Retepora clintonii Vanuxem, Geol. Rep. 3d Dist. New York, 1842, p. 87

Clinton: No locality given.

RETEPORA DIFFUSA Hall. See Pseudohornera diffusa.

RETEPORA FOLIACEA Hall. See Bucania punctifrons.

RETEPORA TRENTONENSIS Nicholson. See Chasmatopora fenestrata.

RETICULARIA McCoy. Genotype: Terebratula imbricata Sowerby.

Reticularia McCoy, Carboniferous Fossils of Ireland, 1844, p. 142.—Waagen, Pal. Indica, 13th ser., 1, 1883, p. 538.—Davidson, Mon. British Brach. 5, Sil. Suppl., Pal. Soc., 1882, p. 80.—Koken, Die Leitfossilien, Leipzig, 1896, p. 242, fig. 203, 1.—Miller, N. A. Geol. Pal., 2d App., 1897, p. 763.—Schellwien, Abhandl. d. k. k. geol. Reichsanst., 16, Heft 1, 1900, p. 82, fig. 13.—Girty, U. S. Geol. Surv., Prof. Pap. 16, 1903, p. 387.—Schuchert, Zittel-Eastman Textb. Pal., 1913, p. 412.

Spirifer subgenus Prosserella Grabau, Michigan Geol. Surv., Geol. Ser., 1, 1909, p. 138.—Schuchert, Zittel-Eastman Textb. Pal., 1913, p. 412. (Genotype: P. modestoides Grabau.)

Reticularia bicostata (Vanuxem).

Orthis bicostatus Vanuxem, Geol. New York, Rep. 3d Dist., 1842, pp. 91, 94.

Spirifer bicostatus Hall, Pal. New York, 2, 1852, p. 263, pl. 54, fig. 4.—Hall and Clarke, Pal. New York, 8, pt. 2, 1893, pp. 19, 37, pl. 36, fig. 7.

Spirifera bicostata Hall, 2d Ann. Rep. New York State Geol., 1883, pl. 61, fig. 7.

Reticularia bicostata Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 341.—Weller, Geol. Surv. New Jersey, Pal. 3, May, 1903, p. 239, pl. 21, figs. 44, 45.—Maynard, Maryland Geol. Surv., Low. Dev., 1913, p. 420, pl. 72, figs. 8-10.

Spirifer cf. bicostatus Clarke and Ruedemann, Mem. New York State Mus., 5, 1903, p. 44, pl. 4, figs. 21, 22.

Helderbergian: Vernon Center, New York; Roundtop, Maryland (Keyser); New Jersey (Decker Ferry).

Reticularia bicostata petila (Hall).

Spirifera bicostata? var. petila Hall, Desc. n. sp. Fossils from Waldron, Indiana, 1879, p. 15.

Spirifera bicostata var. petila Hall, 11th Rep. State Geol. Indiana, 1882, p. 279, pl. 27, figs. 8, 9; Trans. Albany Institute, 10, 1883, p. 71.

Spirifer bicostatus var. petilus Beecher and Clarke, Mem. New York State Mus., 1, 1889, p. 75, pl. 6, figs. 1-3.

Reticularia bicostata petila Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 341.

Spirifer petilus Grabau, Bull. New York State Mus., 69, 1903, p. 1045.

Niagaran (Waldron): Waldron, Indiana.

eticularia dubia (Nettelroth).
Spirifera dubia Nettelroth, Kentucky Fossils Shells, Mem. Kentucky Geol. Surv., 1889, p. 115, pl. 33, figs. 23, 24.
Niagaran (Louisville): Louisville, Kentucky.
Holotype.—Cat. No. 51334, U.S.N.M.

Reticularia (Prosserella) lucasi (Grabau).
Prosserella lucasi Grabau, Michigan Geol. Surv., Geol. Ser., 1, 1909, p. 142, pl. 16, fig. 21; pl. 19, figs. 2, 3; pl. 21, fig. 23.
Upper Monroan (Lucas): Near Sylvania, Lucas County, Ohio; Salt shaft, Detroit, Michigan.

ETICULARIA MODESTA Schuchert. See Spirifer (Delthyris) modestus.

eticularia (Prosserella) modestoides (Grabau).
Prosserella modestoides Grabau, Michigan Geol. Surv., Geol. Ser. 1, 1909, p. 139, pl. 16, figs. 20, 22, 23; pl. 21, figs. 28–30.
Upper Monroan: Salt shaft, Detroit, Michigan (Anderdon); Detroit River bed, opposite Amherstburg, Ontario (Amherstburg).

eticularia (Prosserella) modestoides depressus (Grabau).
Prosserella modestoides mut. depressus Grabau, Michigan Geol. Surv., Geol. Ser. 1, 1909, p. 141, pl. 21, figs. 24–26, 31–33.
Upper Monroan (Amherstburg): Detroit River bed, opposite Amherstburg, Ontario.

eticularia pegramensis Foerste.
Reticularia pegramensis Feorste, Jour. Geol., 11, 1903, p. 710; Bull. Sci. Lab. Denison Univ., 14, 1909, p. 92, pl. 2, fig. 31a, b.
Niagaran (Brownsport): Pegram, Tennessee.

eticularia (Prosserella) planisinosa (Grabau).
Prosserella planisinosus Grabau, Michigan Geol. Surv., Geol. Ser. 1, 1909, p. 147, pl. 16, figs. 19 and 26; pl. 18, fig. 8.
Upper Monroan (Lucas): Salt shaft, Detroit, Michigan.

eticularia proxima Kindle and Breger.
Reticularia proxima Kindle and Breger, 28th Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1904, p. 443, pl. 9, figs. 6–8.
Niagaran: Fishersburg, Hamilton County, Indiana.

eticularia septentrionalis Whiteaves.
Reticularia septentrionalis Whiteaves, Geol. Surv. Canada, Ann. Rep., n. s., 14, App. F, 1904, p. 44; Geol. Surv. Canada, Pal. Foss., 3, pt. 4, 1906, p. 253. pl. 27, figs. 2, 3, 4, 5.
Niagaran: Ekwan River, Canada.

eticularia (Prosserella) subtransversa (Grabau).
Prosserella subtransversa Grabau, Michigan Geol. Surv., Geol. Ser., 1, 1909, p. 143, pl. 21, fig. 27; pl. 18, figs. 7, 9; pl. 19, figs. 1, 4–8, 12, 13.
Upper Monroan (Amherstburg): Monroe County, Michigan.

Reticularia (Prosserella) subtransversa alta (Grabau).
Prosserella subtransversa mut. alta Grabau, Michigan Geol. Surv., Geol. Ser., 1, 1909, p. 145, pl. 18, fig. 10.
Upper Monroan (Amherstburg): Monroe County, Michigan.

Reticularia (Prosserella) unilamellosa (Grabau).
Prosserella unilamellosus Grabau, Michigan Geol. Surv., Geol. Ser., 1, 1909, p. 146, pl. 19, figs. 9-11.
Upper Monroan (Lucas): Patrick quarry, Grosse Isle, Detroit River.

RETIOGRAPTUS Hall. Genotype: Graptolithus tentaculatus Hall.
Retiograptus Hall, Geol. Surv. Canada, dec. 2, 1865, p. 115; 20th Rep. New York State Cab. Nat. Hist., 1868, p. 218; rev. ed., p. 251.—Zittel, Handb. Pal., 1, 1879, p. 302.—Spencer, Trans. Acad. Sci. St. Louis, 4, 1884, p. 562.—Miller, N. A. Geol. Pal., 1889, p. 202.—Koken, Die Leitfossilien, Leipzig, 1896, p. 329.—Roemer and Frech, Leth. geog., 1 Theil, Leth. Pal., 1, 3 Lief., 1897, p. 607.—Ruedemann, Mem. New York State Mus., 7, pt. 1, 1904, pp. 732, 633; ibid., Mem. 11, pt. 2, 1908, p. 462.
Reteograptus Hall, Pal. New York, 3, 1859, p. 518; 13th Rep. New York State Cab. Nat. Hist., 1860, p. 61.—Gurley, Jour. Geol., 4, 1896, p. 80.
Retiograpsus Nicholson, Mon. British Grapt., 1872, p. 123.

RETIOGRAPTUS BARRANDEI Hall. See Retiograptus geinitzianus.

RETIOGRAPTUS EUCHARIS Hall. See Lasiograptus (Thysanograptus) eucharis.

Retiograptus geinitzianus (Hall).
Reteograptus geinitzianus Hall, Pal. New York, 3, 1859, p. 518.—Gurley, Jour. Geol., 4, 1896, p. 80.—Frech, Leth. Pal., 1, 1897, p. 608.—Weller, Geol. Surv. New Jersey, Pal., 3, 1903, p. 215, pl. 16, fig. 18.
Retiograptus geinitzianus Walcott, Trans. Alb. Inst., 10, 1883 (adv. sheets, 1879, p. 35); Bull. Geol. Soc. Amer., 1, 1890, p. 339.—Hall, 20th Rep. New York State Cab. Nat. Hist., 1868, p. 224.—Ruedemann, Mem. New York State Mus. 11, pt. 2, 1908, pp. 463-467, pl. 29, figs. 5, 6; pl. 31, figs. 9-17, figs. 444, 445.
Clathrograptus geinitzianus Lapworth, Ann. Mag. Nat. Hist., 5, 1880, p. 22—T. S. Hall, Geol. Surv. N. S. Wales Rec., 7, pt. 2, 1902, pl. 14, fig. 5.
Reteograptus barrandi Hall, New York State Cab. Nat. Hist., 13th Ann. Rep., 1860, p. 61, fig.
Chazyan (Normanskill): Kenwood, Chatham, etc., New York; New Jersey; Arkansas; Tennessee.
Plesiotype.—Cat. No. 54248, U.S.N.M. (Ruedemann).

Retiograptus tentaculatus (Hall).
Graptolithus tentaculatus Hall, Geol. Surv. Canada, Rep. for 1857, 1858, p. 134; Canadian Nat. Geol., 3, 1858, p. 167.
Reteograptus tentaculatus Hall, Geol. Surv. Canada, dec. 2, 1865, p. 116f, pl. 14, figs. 6-8.—Gurley, Jour. Geology, 4, 1896, p. 299.—Roemer and Frech, Leth. Pal., 1, 1897, p. 608.
Retiograptus tentaculatus Hall, 20th Rep. New York State Cab. Nat. Hist., 1868, p. 199, pl. 4, fig. 8; rev. ed., 1870.—Matthew, Trans. Royal Soc. Canada, 10, sec. 4, 1893, p. 100; Proc. and Trans. Royal Soc. Canada, 11, 1894, p. 114.—Ruedemann, New York State Pal., Ann. Rep., 1902, p. 571; Mem. New York State Mus., 7, pt. 1, 1904, pp. 733, 734, pl. 16, figs. 33-35.
Canadian: Point Levis, Quebec (Levis, Diplograptus dentatus zone); St. John, New Brunswick (Bretonian, Div. C3d); Deepkill, Mount Moreno, etc., New York (Deepkill, D. dentatus zone); Arkansas.

RETIOLITES Barrande. Genotype: Graptolithus geinitzianus Barrande.
Gladiolites Barrande, Grapt. de Boheme, 1850, p. 68 (Retiolites proposed in footnote in case Gladiolites should be considered too near Gladiolus).

RETIOLITES—Continued.

Retiolites Geinitz, Amer. Jour. Sci. Arts, 2d ser., 14, 1852, p. 129; Bull. Soc. Geol. France, 2d ser., 9, 1852, p. 187; Zeits. d. d. geol. Gesell., 3, 1852, p. 389.—Barrande, Neues Jahrb. f. Min., etc., 1852, p. 402.—Hall, Geol. Surv. Canada, dec. 2, 1865, p. 113.—Nicholson, Quart. Jour. Geol. Soc. London, 24, 1868, p. 529.—Carruthers, Geol. Mag., 5, 1868, p. 73, 132.—Hall, 20th Rep. New York State Cab. Hist., 1868, p. 218; rev. ed., p. 251.—Nicholson, Mon. British Grapt., 1872, p. 120.—Zittel, Handb. Pal., 1, 1879, p. 302.—Tullberg, Sveriges Geol. Unders., Ser. C, No. 55, 1883, p. 40.—Spencer, Trans. Acad. Sci. St. Louis, 4, 1884, p. 562, 566; Bull. Mus. Univ. State Missouri, 1, 1884, p. 16.—Jaekel, Zeits. d. d. geol. Gesell., 41, 1889, p. 686.—Miller, N. A. Geol. Pal., 1889, p. 202.—Koken, Die Leitfossilien, Leipzig, 1896, p. 329.—Wiman, Nat. Sci., 9, 1896, p. 240.—Roemer and Frech, Leth. geog., 1 Theil, Leth. Pal., 1, 3 Lief., 1897, p. 667.—Zittel-Eastman Textb. Pal., 1, 1900, p. 119.—Grabau and Shimer, N. A. Index Fossils, 1, 1906, p. 34.—Ruedemann, Mem. New York State Mus., 11, pt. 2, 1908, pp. 467, 469; Zittel-Eastman Textb. Pal., 2d ed., 1913, p. 132.

RETIOLITES ENSIFORMIS Hall. See Trigonograptus ensiformis.

Retiolites geinitzianus venosus (Hall).

Graptolithus venosus Hall, Pal. New York, 2, 1852, p. 40, pl. 17A, fig. 2a–c.

Retiolites venosus Hall, 12th Rep. New York State Cab. Nat. Hist., 1859, p.81 (gen. ref.); Pal. New York, 3, 1859, p. 518; Geol. Surv. Canada, dec. 2, 1865, pp. 22, 47, 113, 114, pl. B, figs. 20–21; 20th Rep. New York State Cab. Nat. Hist., 1868, pl. 1, figs. 20, 21; rev. ed., 1870, p. 213, pl. 1, figs. 20, 21; p. 224.—Nicholson, Mon. British Grapt., 1872, p. 42, fig. 12.—Roemer, Leth. geog., 1, Leth. Pal., Atlas, 1876, pl. 3, fig. 7.—Roemer and Frech, ibid., 1, 3 Lief., 1897, p. 669, fig. 221.—Elles and Wood, Mon. British Grapt., Pal. Soc., 1903, p. xxxiii.—Grabau and Shimer, N. A. Index Fossils, 1, 1906, p. 34, fig. 55a.

Gladiolites venosus Gurley, Jour. Geol., 4, 1896, p. 79, 308.

Retiolites geinitzianus var. venosus Ruedemann, Mem. New York State Mus., 11, pt. 2, 1908, p. 469, pl. 29, figs. 7, 8; pl. 31, figs. 6–8, figs. 449–455.

Not Retiolites venosus Spencer, Bull. Mus. Univ. State Missouri, 1, 1884, p. 16, pl. 1, fig. 2; Trans. Acad. Sci. St. Louis, 4, 1884, pp. 564, 566, pl. 1, fig. 2.—Miller, N. A. Geol. Pal., 1889, p. 202, fig. 215. (Probably not a graptolite.)

Clinton: Rochester, etc., New York; Arisaig, Nova Scotia.

Retiolites (Gladiograptus) perlatus (Nicholson).

Retiolites perlatus Nicholson, Quart. Jour. Geol. Soc., 24, 1868, p. 530, pl. 19 figs. 21, 22.

Retiolites cfr. perlatus Tornquist, Acta Univ. Lund., 26, 1890, p. 11, fig. 26, pl. 2.

Retiolites (Gladiograptus) perlatus Elles and Wood, Mon. British Grapt., 8, 1911, p. 338, pl. 34, figs. 10a–f.

Silurian: Ireland and Scotland (Llandovery-Birkhill and Skelgill); Blaylock Mountain, Montgomery County, Arkansas (Blaylock) [Ulrich].

RETIOLITES VENOSUS Hall. See Retiolites geinitzianus venosus.

RETZIA Billings. See Rhynchospira Hall.

RETZIA EVAX Hall. See Homœospira evax.

RETZIA FORMOSA Whitfield. See Rhynchospira præformosa.

RETZIA (TREMATOSPIRA) GRANULIFERA Meek. See Trematospira granulifera.

RETZIA SINUATA Miller. See Rhynchospira(?) sinuata.

RETZIA SOBRINA Beecher and Clarke. See Homœospira sobrina.

RHABDARIA Billings. Genotype: R. fragilis Billings.
Rhabdaria Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 357.—Miller, N. A. Geol. Pal., 1889, p. 164.

Rhabdaria fragilis Billings.
Rhabdaria fragilis Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 357.—Rauff, Palæontographica, 40, 1894, p. 245.
Canadian (Romaine): Mingan Islands, Quebec.

Rhabdaria furcata Billings.
Rhabdaria furcata Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 358.—Rauff, Pal., 40, 1894, p. 245.
Canadian (Romaine): Mingan Islands, Quebec.

RHABDINOPORA FLABELLIFORMIS Eichwald. See Dictyonema flabelliforme.

RHAPHANOCRINUS Wachsmuth and Springer.
Genotype: Glyptocrinus subnodosus Walcott.
Rhaphanocrinus Wachsmuth and Springer, Proc. Acad. Nat. Sci. Philadelphia, 1885, p. 320 (Rev. Pal., pt. 3, sec. 1, p. 98).—Œhlert, Ann. des Sci. Geol., 19, 1887.—Miller, N. A. Geol. Pal., 1889, p. 277.—Wachsmuth and Springer, Mem. Mus. Comp. Zool. Harvard, 20, 1897, p. 258.—Wachsmuth, Zittel-Eastman Textb. Pal., 1, 1900, p. 145.—Bather, Treatise on Zool., pt. 3, Echinoderma, London, 1900, p. 200.—Springer, Zittel-Eastman Textb. Pal., 2d ed., 1913, p. 187.

Rhaphanocrinus gemmeus Hudson.
Rhaphanocrinus gemmeus Hudson, Bull. New York State Mus., 80, 1905, p. 280, fig. 6, pl. 2, figs. 1-5.
Chazyan (Valcour): Valcour Island, Lake Champlain, New York.

Rhaphanocrinus sculptus (Miller).
Glyptocrinus sculptus Miller, Jour. Cincinnati Soc. Nat. Hist., 5, 1882, p. 37, pl. 1, fig. 2; ibid., 6, 1883, p. 224.—James, ibid., 19, 1897, p. 116.
Rhaphanocrinus sculptus Wachsmuth and Springer, Mem. Mus. Comp. Zool. Harvard, 20, 1897, p. 260, pl. 10, fig. 3.
Richmond (Liberty): Waynesville, Ohio.
Cotypes.—Cat. No. 40772, U.S.N.M.

Rhaphanocrinus subnodosus (Walcott).
Glyptocrinus? subnodosus Walcott, 35th Rep. New York State Mus. Nat. Hist., 1883, p. 208, pl. 17, fig. 3.—Miller, Jour. Cincinnati Soc. Nat. Hist., 6, 1883, p. 227.
Rhaphanocrinus subnodosus Wachsmuth and Springer, Proc. Acad. Nat. Sci. Philadelphia, 1885, p. 321 (Rev. Pal., pt. 3, sec. 1, p. 99); Mem. Mus. Comp. Zool. Harvard, 20, 1897, p. 259, pl. 11, fig. 2.
Trenton: Trenton Falls, New York.

RHINIDICTYA Ulrich. Genotype: Rhinidictya nicholsoni Ulrich.
Stictopora (part) Hall, Pal. New York, 1, 1847, p. 73.—Ulrich, Geol. Surv. Illinois, 8, 1890, p. 388.
Rhinidictya Ulrich, Jour. Cincinnati Soc. Nat. Hist., 5, 1882, p. 152.—Hall and Simpson, Pal. New York, 6, 1887, p. 20.—Miller, N. A. Geol. Pal., 1889, p. 320.—Ulrich, Geol. Minnesota, 3, 1893, p. 124.—Pocta, Syst. Sil. Centre

RHINIDICTYA—Continued.

Boheme, 8, pt. 1, 1894, p. 15.—Ulrich, Zittel's Textb. Pal. (Engl. ed.), 1896, p. 279.—Simpson, 14th Ann. Rep. State Geol. New York for 1894, 1897, p. 605.—Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 48.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 158.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 755.—Bassler, Bull. U. S. Nat. Mus., 77, 1911, pp. 131, 132; Zittel-Eastman Textb. Pal., 1913, p. 345.

Rhinidictya basalis (Ulrich).
Stictopora basalis Ulrich, Jour. Cincinnati Soc. Nat. Hist., 5, 1882, p. 169, pl. 8, figs. 4, 4a.
Rhinidictya basalis Ulrich, Geol. Minnesota, 3, 1893, p. 128.
Stones River (Lebanon): Shelbyville, Tennessee.
Holotype.—Cat. No. 43720, U.S.N.M.

RHINIDICTYA? BORKHOLMIENSIS Wiman. See Pachydictya bifurcata.

Rhinidictya exigua Ulrich.
Rhinidictya exigua Ulrich, Jour. Cincinnati Soc. Nat. Hist., 12, 1890, p. 184, fig. 9; Geol. Minnesota, 3, 1893, p. 131, pl. 8, figs. 6–10.
Black River (Decorah): Minneapolis, St. Paul, and Fountain, Minnesota.
Cotypes.—Cat. No. 43708, U.S.N.M.

Rhinidictya fenestrata (Hall).
Stictopora fenestrata Hall, Pal. New York, 1, 1847, p. 16, pl. 4, figs. 4a–e.
Sulcopora fenestrata D'Orbigny, Prodr. de Pal., 1, 1850, p. 22.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 206, pl. 3, figs 4a, 5a.
Rhinidictya fenestrata Ulrich, Geol. Surv. Illinois, 8, 1890, p. 492.
Chazyan: Chazy and Galway, New York.

Rhinidictya fidelis (Ulrich).
Stictopora fidelis (part) Ulrich, 14th Ann. Rep. Geol. Nat. Hist. Surv. Minnesota, 1886, p. 68.
Rhinidictya fidelis Ulrich, Geol. Minnesota, 3, 1893, p. 134, pl. 6, figs. 7–7b, 8.
Eurydictya multipora (part), Ulrich, Geol. Minnesota, 3, 1893, p. 139, pl. 7, figs. 24, 29–31.
Black River (Decorah): Minneapolis, Minnesota.
Cotypes.—Cat. No. 43603, U.S.N.M.

Rhinidictya grandis Ulrich.
Rhinidictya grandis Ulrich, Geol. Minnesota, 3, 1893, p. 136, pl. 5, figs. 11, 12; pl. 6, figs. 19, 20.
Black River (Platteville): Dixon, Illinois; Beloit, Mineral Point, and Janesville, Wisconsin.
Cotypes.—Cat. No. 43606, U.S.N.M.

RHINIDICTYA HUMILIS Ulrich. See Pachydictya pumila.

Rhinidictya lata (Ulrich).
Dicranopora lata Ulrich, Jour. Cincinnati Soc. Nat. Hist., 5, 1882, p. 166, pl. 6, figs. 16, 16a.
Rhinidictya lata Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 390.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 875, pl. 32, figs. 7, 7a.
Richmond (Waynesville): Clarksville, etc., Ohio; Indiana.
Cotypes.—Cat. No. 44098, U.S.N.M.

Rhinidictya minima Ulrich.

Rhinidictya minima Ulrich, Jour. Cincinnati Soc. Nat. Hist., 12, 1890, p. 183, fig. 8; Geol. Minnesota, 3, 1893, p. 132, pl. 5, figs. 13–18.

Trenton (Prosser): Cannon Falls, Minnesota.

Cotypes.—Cat. No. 43709, U.S.N.M.

Rhinidictya minima modesta Ulrich.

Rhinidictya minima var. modesta Ulrich, Geol. Minnesota, 3, 1893, p. 133, pl. 5, fig. 17.

Trenton (Prosser): Cannon Falls, Minnesota.

Cotypes.—Cat. No. 43610, U.S.N.M.

Rhinidictya mutabilis (Ulrich).

Stictopora mutabilis Ulrich (part), 14th Ann. Rep. Geol. Nat. Hist. Surv. Minnesota, 1886, p. 66.—Miller, N. A. Geol. Pal., 1889, fig. 517 (p. 324).—Ulrich, Geol. Surv. Illinois, 8, 1890, figs. 2c–h (p. 304).

Rhinidictya mutabilis Ulrich, Geol. Minnesota, 3, 1893, p. 125, pl. 6, figs. 1–6, 12, 13; pl. 7, figs. 10–23, 25–28; pl. 8, figs. 1–3.—Whiteaves, Pal. Foss., 3, 1897, p. 240.—Sardeson, Amer. Geol., 26, 1900, p. 388, fig. 1; Jour. Geol., 9, 1901, p. 155, pl. B, figs. 4–6.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 158, fig. 208i.—Bassler, Bull. U. S. Nat. Mus., 77, 1911, pp. 132, 133, fig. 56; Zittel-Eastman Textb. Pal., 1913, p. 345, fig. 505a–c.

Stictopora mutabilis var. minor Ulrich, 14th Ann. Rep. Geol. Nat. Hist. Surv. Minnesota, 1886, p. 67.

Black River (Decorah) and Trenton (Prosser): Minneapolis, etc., Minnesota; Decorah, Iowa.

Ordovician (Wassalem): Uxnorm, Esthonia, Russia.

Cotypes.—Cat. No. 43812, U.S.N.M.

Rhinidictya mutabilis major (Ulrich).

Stictopora mutabilis var. major Ulrich, 14th Ann. Rep. Geol. Nat. Hist. Surv. Minnesota, 1886, p. 66.

Rhinidictya mutabilis var. major Ulrich, Geol. Minnesota, 3, 1893, p. 127, pl. 7, figs. 22, 23, 25–28, 32.

Black River (Decorah): St. Paul, Minneapolis, and Cannon Falls, Minnesota.

Cotypes.—Cat. No. 43813, U.S.N.M.

Rhinidictya mutabilis senilis Ulrich.

Rhinidictya mutabilis var. senilis Ulrich, Geol. Minnesota, 3, 1893, p. 127, pl. 6, figs. 2, 3; pl. 7, figs. 16, 17.

Black River (Decorah): St. Paul, Minnesota.

Cotypes.—Cat. No. 43814, U.S.N.M.

Rhinidictya nashvillensis (Miller).

Bythopora nashvillensis Miller, Jour. Cincinnati Soc. Nat. Hist., 3, 1880, p. 14[illegible], pl. 4, figs. 4, 4a; N. A. Geol. Pal., 1889, fig. 462 (p. 295).

Rhinidictya nashvillensis Ulrich, Jour. Cincinnati Soc. Nat. Hist., 12, 1890, p. 185.—Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 391.

Stones River (Pierce): Murfreesboro, Tennessee.

Rhinidictya neglecta Ulrich.

Stictopora paupera (part) Ulrich, 14th Ann. Rep. Geol. Nat. Hist. Surv. Minnesota, 1886, p. 69.

Rhinidictya neglecta Ulrich, Geol. Minnesota, 3, 1893, p. 130, pl. 5, figs. 22–25.

Trenton: Frankfort, Boyle, and Mercer Counties, Kentucky (Wilmore); Nashville, Tennessee; St. Paul, Minnesota.

Cotypes.—Cat. No. 43608, U.S.N.M.

Rhinidictya neglecta canadensis Ulrich.
Rhinidictya neglecta var. canadensis Ulrich, Geol. Minnesota, 3, 1893, p. 130.
Trenton: Ottawa, Ontario.
Holotype.—Cat. No. 43609, U.S.N.M.

Rhinidictya nicholsoni Ulrich.
Rhinidictya nicholsoni Ulrich, Jour. Cincinnati Soc. Nat. Hist., 5, 1882, p. 170, pl. 8, figs. 6–6b.—Miller, N. A. Geol. Pal., 1889, fig. 507 (p. 320).—Bassler, Bull. Virginia Geol. Surv., 2a, 1909, pl. 23, figs. 9–11.
Black River (Lowville): High Bridge, Kentucky; Virginia; Tennessee.
Cotypes.—Cat. No. 43706, U.S.N.M.

Rhinidictya nitidula (Billings).
Ptilodictya nitidula Billings, Catal. Sil. Foss. Anticosti, 1886, p. 9.
Dicranopora nitidula Miller, N. A. Geol. Pal., 1889, p. 300.
Richmond (Charleton): Charleton Point and Salmon River, Anticosti.

Rhinidictya obliqua (Ulrich) Whiteaves.
Rhinidictya obliqua (Ulrich) Whiteaves, Pal. Foss., 3, 1897, p. 240.
Mohawkian or Richmond: Deer Island, Lake Winnipeg, Canada.

hinidictya parallela (James).
Ptilodictya parallela James, Paleontologist, No. 1, 1878, p. 5.
Rhinidictya parallela Ulrich, Jour. Cincinnati Soc. Nat. Hist., 5, 1882, p. 170.—Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 392.—Bassler, Proc. U. S. Nat. Mus., 30, 1906, p. 52, pl. 2, figs. 5–7; pl. 5, figs. 2, 3.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 875, pl. 32, fig. 8.
Ptilodictya granulosa James, Paleontologist, No. 1, 1878, p. 4.
Eden (Economy): Cincinnati, Ohio, and vicinity.

hinidictya paupera Ulrich.
Stictopora paupera (part), 14th Ann. Rep. Geol. Nat. Hist. Surv. Minnesota, 1886, p. 69.
Rhinidictya paupera Ulrich, Geol. Minnesota, 3, 1893, p. 129, pl. 5, figs. 19–21.
Black River (Decorah): St. Paul and Cannon Falls, Minnesota; Decorah, Iowa.
Cotypes.—Cat. No. 43602, U.S.N.M.

hinidictya pediculata Ulrich.
Rhinidictya pediculata Ulrich, Geol. Minnesota, 3, 1893, p. 137, pl. 7, figs. 1–5.
Black River (Platteville): Minneapolis, Minnesota.
Cotypes.—Cat. No. 43605, U.S.N.M.

hinidictya trentonensis (Ulrich).
Dicranopora trentonensis Ulrich, Jour. Cincinnati Soc. Nat. Hist., 5, 1882, p. 167, pl. 6, figs. 15, 15a.
Rhinidictya trentonensis Ulrich, Geol. Minnesota, 3, 1893, p. 135, pl. 6, figs. 14–18; pl. 7, figs. 6–9.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 159.
Stictopora fidelis (part) Ulrich, 14th Ann. Rep. Geol. Nat. Hist. Surv. Minnesota, 1886, p. 68.
Stones River (Lebanon): Lebanon, etc., Tennessee.
Black River (Platteville): Minnesota, Wisconsin, and Illinois.
Holotype.—Cat. No. 43707, U.S.N.M.

RHINOBOLUS Hall. Genotype: Rhynobolus sp. Hall = ?Obolus galtensis Billings.
Rhynobolus Hall, Notes on some New or Imperfectly Known Forms among the Brachiopoda, 1871, p. 5; ibid., 1872, p. 5 pl. 13, fig. 10; 23d Rep. New York

RHINOBOLUS—Continued.

State Cab. Nat. Hist., 1873, p. 247, pl. 13, fig. 10.—Waagen, Pal. Indica, 13th ser., 1, 1885, p. 761.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pp. 44, 46, 164; 11th Ann. Rep. New York State Geol., 1894, p. 239.

Rhinobolus Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 346.—Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 2, 1895, p. 60.

Rhinobolus davidsoni Hall and Clarke.

Rhinobolus davidsoni Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pp. 45, 176, pl. 4B, figs. 10–12; 48th Rep. New York State Mus., 2, for 1895, 1897, p. 331, pl. 2, figs. 6–8; 14th Rep. State Geol. New York for 1894, 1897, p. 331, pl. 2, figs. 6–8.—Huene, Verh. d. Russ.-Kais. Min. Ges. zu St. Petersburg, 38, 1900, p. 194, fig. 4.

Niagaran: Near Grafton, Wisconsin.

Rhinobolus galtensis (Billings).

Obolus galtensis Billings, Pal. Fossils, 1, Geol. Surv. Canada, 1865, p. 168, fig. 153.

Obolellina galtensis Billings, Canadian Nat. Geol., 6, 1871, p. 222; ibid., 1872, p. 328.

Trimerella minor Dall, Amer. Jour. Conch., 7, 1871, p. 83, pl. 11, fig. 6.

?Rhynobolus sp.? Hall, 23d Rep. New York State Cab. Nat. Hist., 1873, p. 247, pl. 13, fig. 10.

Trimerella(?) galtensis Davidson and King, Quart. Jour. Geol. Soc. London, 30, 1874, p. 151, pl. 18, fig. 13; pl. 19, fig. 4.—Miller, N. A. Geol. Pal., 1889, p. 387, fig. 633.

Rhynobolus galtensis Whiteaves, Pal. Fossils, 3, 1884, p. 7, pl. 2, fig. 1; pl. 8, fig. 3.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 908, figs.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 45, pl. 4B, figs. 7–9.

Rhinobolus Galtensis Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 2, 1895, p. 59, pl. 15, fig. 2 (?p. 61, pl. 9, figs. 2, 2a).—Huene, Verh. d. Russ.-Kais. Min. Gesell. zu St. Petersburg, 38, 1900, p. 194, fig. 2.

Niagaran (Guelph): Galt, Elora, Durham, etc., Ontario.

RHINOPORA Hall. Genotype: Rhinopora verrucosa Hall.

Rhinopora Hall, Pal. New York, 2, 1852, p. 48.—Foerste, Bull. Sci. Lab. Denison Univ., 2, 1887, p. 166.—Miller, N. A. Geol. Pal., 1889, p. 321.—Ulrich, Geol. Surv. Illinois, 8, 1890, p. 388; Zittel's Textb. Pal. (Engl. ed.), 1896, p. 280.—Simpson, 14th Ann. Rep. State Geol. New York for 1894, 1897, p. 540.—Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 54.—Grabau, Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 174; Bull. New York State Mus., 45, 1901, p. 174.—Bassler, Bull. U. S. Geol. Surv., 292, 1906, p. 59; Zittel-Eastman Textb. Pal., 1913, p. 347.

Rhinopora curvata Ringueberg.

Rhinopora curvata Ringueberg, Bull. Buffalo Soc. Nat. Hist., 5, 1886, p. 19, pl. 2, fig. 14.—Bassler, Bull. U. S. Geol. Surv., 292, 1906, p. 60, pl. 22, figs. 12, 13.

Clinton (Rochester): Lockport, New York; Grimsby, Ontario.

Plesiotype.—Cat. No. 35767, U.S.N.M.

RHINOPORA FRONDOSA Lesley. See Rhinopora verrucosa.

Rhinopora prima Whitfield.

Rhinopora prima Whitfield, Bull. Amer. Mus. Nat. Hist., 9, 1897, p. 177, pl. 6, figs. 5, 6.—Seely, Vermont State Geol., Rep. 5, 1906, p. 184, pl. 42; ibid. Rep. 7, 1910, pl. 61, figs. 5, 6.

Canadian (Beekmantown): Fort Cassin, Vermont.

Observation.—Not a bryozoan.

RHINOPORA TUBERCULOSA Hall. **See Fistulipora tuberculosa.**

Rhinopora? tubulosa Hall.
Rhinopora tubulosa Hall, Pal. New York, 2, 1852, p. 49, pl. 19, figs. 2a–c.
Clinton: Sodus, Wayne County, and Reynales Basin, New York.

RHINOPORA VENOSA Spencer. See Rhinopora verrucosa.

Rhinopora verrucosa Hall.
Rhinopora verrucosa Hall, Pal. New York, 2, 1852, p. 48, pl. 19, figs. 1a–c.—Rominger, Proc. Acad. Nat. Sci. Philadelphia, 1866, p. 119.—Nicholson and Hinde, Canadian Jour., n. s., 14, 1874, p. 141.—Nicholson, Pal. Prov. Ontario, 1875 p. 44, fig. 19, 1, 1a.—Foerste, Bull. Sci. Lab. Denison Univ., 2, 1887, p. 166; ibid., 3, 1888, pl. 15, fig. 13; Proc. Boston Soc. Nat. Hist., 24, 1889, p. 332; Geol. Surv. Ohio, 7, 1895, p. 599, pl. 28, figs. 13a–c.—Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 393.—Bassler, Bull. U. S. Geol. Surv., 292, 1906, pl. 23, figs. 7–9; Proc. U. S. Nat. Mus., 30, 1906, p. 53.
Rhinopora frondosa Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 875, figs.
Rhinopora venosa Spencer, Trans. St. Louis Acad. Sci., 4, 1884, p. 604, pl. 7, fig. 3; Bull. Mus. Univ. State Missouri, 1, 1884, p. 54, pl. 7, fig. 3.
Escharina? distorta James, Paleontologist, No. 3, 1875, p. 21.
Upper Medinan: Flamboro Head, Dundas, etc., Canada (Cataract); Dayton, Fairhaven, etc., Ohio; Hanover, Indiana; Tennessee; Alabama (Brassfield).

RHIPIDOMELLA Œhlert. Genotype: Terebratula michelini L'Éveillé.
Rhipidomys Œhlert (not Wagnor, 1844), Fischer's Manuel Conch., 1887, p. 1288.—Hall, Bull. Geol. Soc. Amer., 1, 1889, p. 21.
Rhipidomella Œhlert, Jour. Conch., 1891, p. 372.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 209; 11th Ann. Rep. New York State Geol., 1894, p. 271.—Grabau, Bull. Buffalo Soc. Nat. Sci., 6, 1899, p. 188; ibid., 7, 1901, p. 188; Bull. New York State Mus., 45, 1901, p. 188.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 262.—Schuchert, Zittel-Eastman Textb. Pal., 1913, p. 382.

Rhipidomella circulus Hall.
Orthis circulus Hall, Geol. New York, Rep. 4th Dist., 1843, p. 71, fig. 1; Pal. New York, 2, 1852, p. 56, pl. 20, fig. 6.—Billings, Canadian Nat. Geol., 1, 1856, p. 134, pl. 2, fig. 1.
Orthis circularis Owen, Amer. Jour. Sci. Arts, 48, 1845, p. 305, fig. 1.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 511, figs.
Rhipidomella circulus Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pp. 210, 224, pl. 6A, figs. 1, 2.—Grabau, Bull. New York State Mus., 45, p. 188, fig. 99; Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 188, fig. 99.—Kindle and Breger, 28th Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1904, p. 434, pl. 2, fig. 16.
Early Silurian: Reynales Basin, New York (Clinton); Indiana; Ontario (Cataract).

Rhipidomella emarginata (Hall).
Orthis oblata var. emarginata Hall, Pal. New York, 3, 1859, p. 164, pl. 10a, figs. 4–6.
Rhipidomella emarginata Maynard, Maryland Geol. Surv., Low. Dev., 1913, p. 302, pl. 55, figs. 1–8.
Helderbergian (Keyser): Cash Valley and Cumberland, Maryland; Keyser, etc., West Virginia.

Rhipidomella hybrida (Sowerby).

Orthis hybrida Sowerby, Murchison's Sil. Syst., 1839, p. 630, pl. 13, fig. 11.—Hall, Geol. New York; Rep. 4th Dist., 1843, p. 105, fig. 7; Pal. New York, 2, 1852, p. 253, pl. 52, fig. 4.—Roemer, Die Sil. Fauna West. Tennessee, 1860, p. 63, pl. 5, fig. 6.—Emmons, Man. Geol., 1860, p. 109, fig. 99.—Meek and Worthen, Geol. Surv. Illinois, 1868, p. 371, pl. 7, fig. 7.—Hall, 28th Rep. New York State Mus. Nat. Hist., 1879, p. 149, pl. 21, figs. 18-25; 11th Rep. State Geol. Indiana, 1882, p. 285, pl. 21, figs. 18-25; 2d Ann. Rep. New York State Geol., 1883, pl. 36, figs. 1-5.—Foerste, Bull. Sci. Lab. Denison Univ., 1, 1885, p. 83, pl. 13, fig. 10.—Beecher and Clarke, Mem. New York State Mus., 1, 1889, p. 17, pl. 1, figs. 13-18.—Nettelroth, Kentucky Fossil Shells, Mem. Kentucky Geol. Surv., 1889, p. 39, pl. 32, figs. 32-35.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 517, figs.

Orthis hybrida? Hall, Trans. Albany Inst., 4, 1863, p. 209.

Rhipidomella hybrida Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pp. 210, 224, pl. 6, figs. 1-5.—Grabau, Bull. New York State Mus., 45, 1901, p. 188, fig. 98; Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 188, fig. 98.—Kindle and Breger, 28th Rep. Ann. Dep. Geol. Nat. Res. Indiana, 1904, p. 433, pl. 2, fig. 8.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 263, fig. 315.—Savage, Bull. Geol. Surv. Illinois, 23, 1913, pl. 7, fig. 10.

Orthis (Rhipidomella) hybrida Foerste, Geol. Ohio, 7, 1895, p. 584, pl. 25, fig. 10.

Dalmanella cf. hybrida Clarke and Ruedemann, Mem. New York State Mus., 5, 1903, pl. 4, p. 42, figs. 7, 8.

Silurian: Europe; many localities in the Niagaran of the United States and Canada.

Plesiotype.—Cat. No. 51346, U.S.N.M.

Rhipidomella lenticularis Foerste.

Rhipidomella lenticularis Foerste, Jour. Geol., 11, 1903, p. 711; Bull. Sci. Lab. Denison Univ., 14, 1909, pl. 2, figs. 28A, B, p. 72.

Niagaran (Brownsport): Brownsport Furnace, 3 miles west of Vice Landing, Tennessee.

Rhipidomella magnicardinalis Foerste.

Rhipidomella magnicardinalis Foerste, Cincinnati Soc. Nat. Hist. Jour., 21, 1909, p. 27, pl. 1, fig. 11a-d, pl. 2, fig. 12A, B.

Clinton (West Union): Big Salt Lick Creek, Lewis County, Kentucky.

RHIPIDOMELLA MEDIA Schuchert. See Dalmanella elegantula media.

Rhipidomella newsomensis Foerste.

Rhipidomella newsomensis Foerste, Bull. Sci. Lab. Denison Univ., 14, 1909, p. 73, pl. 4, figs. 72A, B.

Niagaran (Waldron): Newsom, Tennessee; Hartsville, Waldron, etc., Indiana.

Rhipidomella preoblata Weller.

Rhipidomella preoblata Weller, Geol. Surv. New Jersey, Pal., 3, 1903, p. 232, pl. 20, figs. 25, 26.

Helderbergian (Decker Ferry): Two miles south of Tristates, New York.

RHIPIDOMELLA RHYNCHONELLIFORMIS Schuchert. See Rhipidomella uberis rhynchonelliformis.

Rhipidomella saffordi Foerste.

Rhipidomella saffordi Foerste, Jour. Geol., 11, 1903, p. 711; Bull. Sci. Lab. Denison Univ., 14, 1909, p. 72, pl. 1, figs. 17A-C.

Niagaran (Brownsport): Gant Place, Pegram, Bath Springs, and near Savannah, Tennessee.

Rhipidomella sola (Billings).
Orthis sola Billings, Cat. Sil. Fossils of Anticosti, 1866, p. 12.
Richmond (Charleton): Salmon River, Anticosti.

Rhipidomella subcircula (Simpson).
Orthis subcircula Simpson, Trans. Amer. Phil. Soc., n. s., 16, 1889, p. 437, fig. 2.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 534, figs.
Rhipidomella subcirculus Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 352.
Clinton: Mifflin and Huntington Counties, Pennsylvania.

Rhipidomella tenuilineata Savage.
Rhipidomella tenuilineata Savage, Bull. Geol. Surv. Illinois, 23, 1913, p. 77, pl. 4, figs. 9, 10.
Upper Medinan (Edgewood): Louisiana, near mouth of Buffalo Creek, Pike County, Missouri.

Rhipidomella uberis (Billings).
Orthis æquivalva Shaler (not Hall, 1847), Bull. Mus. Comp. Zool., 1, 1865, p. 66.
Orthis uberis Billings, Catalogue Sil. Foss. Anticosti, 1866, p. 42.
Rhipidomella uberis Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 224.
Gamachian (Ellis Bay) and Anticostian (Becsie River—Chicotte): Junction Cliff, etc., Anticosti.

Rhipidomella uberis rhynchonelliformis (Shaler).
Orthis rhynchonelliformis Shaler, Bull. Mus. Comp. Zool., 1, 1865, p. 66.—Billings, Cat. Sil. Foss. Anticosti, 1866, p. 42.
Rhipidomella rhynchonelliformis Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 351.
Gamachian (Ellis Bay) and Anticostian (Becsie River—Jupiter River): Gull Cove, Jupiter River, etc., Anticosti.

RHIPIDOMYS Œhlert. See Rhipidomella Œhlert.

RHIZOGRAPTUS Spencer. Genotype: R. bulbosus Spencer.
Rhizograpsus Spencer, Canadian Nat., n. s., 8, 1878, p. 460.
Rhizograptus Spencer, Proc. Amer. Assoc. Adv. Sci., 31, 1883, p. 364; Bull. Mus. Univ. State Missouri, 1, 1884, p. 30; Trans. Acad. Sci. St. Louis, 4, 1884, p. 562, 580.—Miller, N. A. Geol. Pal., 1889, p. 202.

Rhizograptus bulbosus Spencer.
Rhizograpsus bulbosus Spencer, Canadian Nat., n. s., 8, 1878, p. 460.—Gurley, Jour. Geol., 4, 1896, pp. 101, 308.
Rhizograptus bulbosus Spencer, Bull. Mus. Univ. State Missouri, 1, 1884, p. 30, pl. 4, fig. 4; Trans. Acad. Sci. St. Louis, 4, 1884, p. 580, pl. 4, fig. 4.—Miller, N. A. Geol. Pal., 1889, p. 202, fig. 215.—Bassler, Bull. U. S. Nat. Mus., 65, 1909, p. 41, fig. 52.
Niagaran dolomite: Hamilton, Ontario.

RHIZOPHYLLUM Lindstrom. See Calceola subgenus Rhizophyllum.

RHODOCRINUS (THYSANOCRINUS) ACULEATUS Shumard. See Dimerocrinus aculeatus.

RHODOCRINUS ASPERATUS Billings. See Deocrinus asperatus.

RHODOCRINUS (THYSANOCRINUS) CANALICULATUS Shumard. See Thysanocrinus canaliculatus.

RHODOCRINUS (LYRIOCRINUS) DACTYLUS Shumard. See Lyriocrinus dactylus.

Rhodocrinus gigas Billings.
Rhodocrinus gigas Billings, Geol. Surv. Canada, dec. 4, 1859, pl. 6, fig. 3.
Trenton: Ottawa, Ontario.
Observation.—Not recognized. Founded on stem fragment.

RHODOCRINUS HALLI Lyon. See Dimerocrinus halli.

RHODOCRINUS (THYSANOCRINUS) IMMATURUS Shumard. See Gazacrinus immaturus.

RHODOCRINUS (THYSANOCRINUS) LILLIFORMIS Shumard. See Dimerocrinus lilliformis.

RHODOCRINUS (LYRIOCRINUS) MELISSA Hall. See Lyriocrinus melissa.

RHODOCRINUS MICROBASILIS Billings. See Archæocrinus microbasilis.

RHODOCRINUS PYRIFORMIS Billings. See Archæocrinus pyriformis.

RHODOCRINUS? RECTUS Hall. See Crinocystites? rectus.

RHODOCRINUS (LYRIOCRINUS) SCULPTILIS Hall. See Lyriocrinus sculptilis.

RHODOCRINUS VESPERALIS White. See Diabolocrinus vesperalis.

RHOMBODICTYON Whitfield. Genotype: R. reniforme Whitfield.
Rhombodictyon Whitfield, Bull. Amer. Mus. Nat. Hist., 1, 1886, p. 347.—Miller, N. A. Geol. Pal., 1889, p. 164.—James, J. F., Jour. Cincinnati Soc. Nat. Hist., 14, pt. 1, 1891, p. 57.

Rhombodictyon discum Whitfield.
Rhombodictyon discum Whitfield, Bull. Amer. Mus. Nat. Hist., 1, 1886, p. 348, pl. 35, fig. 1.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 877, fig.
Chazyan (Normanskill): Kenwood, Albany County, New York.

Rhombodictyon globosum James.
Rhombodictyon globosus James, J. F., Jour. Cincinnati Soc. Nat. Hist., 14, pt. 1, 1891, p. 57, figs. 2a–c.
Eden(?): Cincinnati, Ohio.

Rhombodictyon reniforme Whitfield.
Rhombodictyon reniforme Whitfield, Bull. Amer. Mus. Nat. Hist., 1, 1886, p. 347, pl. 35, figs. 2–7.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 879, figs.
Chazyan (Normanskill): Kenwood, Albany County, New York.

Rhombodictyon reniforme rhombiforme Whitfield.
Rhombodictyon reniforme var. rhombiforme Whitfield, Bull. Amer. Mus. Nat. Hist., 1, 1886, p. 348, pl. 35, figs. 8, 9.
Chazyan (Normanskill): Kenwood, Albany County, New York.

RHOMBOPORA GRANULIFERA Ulrich. See Batostomella granulifera.

RHOMBOPTERIA Jackson. Genotype: Avicula mira Barrande.
Rhombopteria Jackson, Mem. Boston Soc. Nat. Hist., 4, 1890, pp. 330–380; Amer. Nat., 24, 1890, p. 1141.—Dall, Zittel-Eastman Textb. Pal., 2d ed., 1913, p. 444.
Newsomella (subgenus of Rhombopteria) Foerste, Bull. Sci. Lab. Denison Univ.; 14, 1909, p. 68. (Genotype: Rhombopteria ulrichi Foerste.)

Rhombopteria (Newsomella) divaricata Foerste.
Rhombopteria (Newsomella) revoluta Foerste, Bull. Sci. Lab. Denison Univ., 14, 1909, p.68, pl. 4, figs. 63a–c. (Name R. divaricata suggested at end.)
Niagaran (Waldron): Newsom, Tennessee.

Rhombopteria (Newsomella) revoluta (Winchell and Marcy).
Pterinea revoluta Winchell and Marcy, Mem. Boston Soc. Nat. Hist., 1, 1865, p. 95, pl. 2, fig. 12.
Rhombopteria (Newsomella) revoluta Foerste, Bull. Sci. Lab. Denison Univ., 14, 1909, p. 68 (gen. ref.).
Niagaran (Racine): Chicago, Illinois.

Rhombopteria (Newsomella) ulrichi Foerste.
Rhombopteria (Newsomella) ulrichi Foerste, Bull. Sci. Lab. Denison Univ., 14, 1909, p. 67, pl. 4, fig. 62a–b.
Niagaran (Waldron): Newsom, Tennessee.

RHOMBOTRYPA Ulrich and Bassler. Genotype: Chætetes quadratus Rominger.
Monotrypella (part) of authors.
Rhombotrypa Ulrich and Bassler, Smiths. Misc. Coll., Quart., 47, 1904, p. 44.—Bassler, Bull. U. S. Geol. Surv., 292, 1906, p. 37.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 755.

Rhombotrypa crassimuralis (Ulrich).
Monotrypella crassimuralis Ulrich, Geol. Surv. Illinois, 8, 1890, p. 452, pl. 38, figs. 2–2f.
Monticulipora crassimuralis J. F. James, Jour. Cincinnati Soc. Nat. Hist., 16. 1894, p. 208.
Rhombotrypa crassimuralis Ulrich and Bassler, Smiths. Misc. Coll., Quart., 47, 1904, p. 45, 46 (gen. ref.).—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 876, pl. 23, figs. 2–2c.
Richmond: Wilmington, Illinois; Tennessee (Fernvale); ?Richmond, Indiana, Figured sections of *cotype*.—Cat. No. 43780, U.S.N.M.

Rhombotrypa quadrata (Rominger).
Chætetes quadratus Rominger, Proc. Acad. Nat. Sci. Philadelphia, 1866, p. 116.
Monticulipora (Monotrypa) quadrata Nicholson, Genus Monticulipora, 1881, p. 179, fig. 36.
Monticulipora quadrata James and James, Jour. Cincinnati Soc. Nat. Hist., 10, 1888, p. 176; James, ibid., 16, 1894, p. 198.
Monotrypella quadrata Ulrich, Jour. Cincinnati Soc. Nat. Hist., 5, 1882, p. 248; Contr. Micro-Pal. Cambro-Sil., pt. 2, 1889, p. 36.—Whiteaves, Geol. Surv. Canada, Pal. Foss., 3, 1895, p. 116.—Miller, N. A. Geol. Pal., 1889, p. 196, fig. 195.—Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 318.—Hayes and Ulrich, U. S. Geol. Surv., Folio 95, illus. sheet, 1903, fig. 9, 10.
Monotrypella (Rhombotrypa) quadrata Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 131.
Rhombotrypa quadrata Nickles, Bull. Kentucky Geol. Surv., 5, 1905, p. 58, pl. 3, fig. 11.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 877, pl. 23, figs. 4, 4b; pl. 25, fig. 5.—Ulrich and Bassler, Smiths. Misc. Coll., Quart., 47, 1904, p. 45.
Chætetes rhombicus Nicholson, Pal. Ohio, 2, 1875, p. 201, pl. 21, figs. 12, 12a; Quart. Jour. Geol. Soc. London, 30, 1874, p. 507, pl. 29, figs. 11, 11b; Ann. Mag. Nat. Hist., 4th ser., 18, 1876, p. 86, pl. 5, figs. 1, 1b.
Monticulipora rectangularis Whitfield, Ann. Rep. Geol. Surv. Wisconsin, 1878, p. 70; Geol. Surv. Wisconsin, 4, 1882, p. 249, pl. 11, figs. 11, 12.—Buel, Trans. Wisconsin Acad. Sci., 5, 1882, p. 190.—Chamberlin, Geol. Wisconsin, 1, 1883, p. 172.

Rhombotrypa quadrata—Continued.

Monticulipora multituberculata Whitfield, Ann. Rep. Geol. Surv. Wisconsin, 1878, p. 71; Geol. Surv. Wisconsin, 4, 1882, p. 250, pl. 11, figs. 9, 10.—Buel, Trans. Wisconsin Acad. Sci., 5, 1882, p. 190.

Richmond: A common and characteristic species of almost all the divisions of the Richmond in North America.

Plesiotypes.—Cat. No. 35401, U.S.N.M. (Hayes and Ulrich).

Rhombotrypa spinulifera Bassler.

Rhombotrypa spinulifera Bassler, Bull. U. S. Geol. Surv., 292, 1906, p. 37, pl. 10, figs. 13–16; pl. 25, fig. 21.

Clinton: Lockport and Rochester, New York; Thorold, Ontario (Rochester); Osgood, Indiana (Osgood).

Cotypes.—Cat. Nos. 35494, 35495, U.S.N.M.

Rhombotrypa subquadrata (Ulrich).

Monotrypella subquadrata Ulrich, Jour Cincinnati Soc. Nat. Hist., 5, 1882, p. 249, pl. 11, figs. 4–4b.

Monticulipora quadrata var. subquadrata J. F. James, Jour. Cincinnati Soc. Nat. Hist., 16, 1894, p. 199.

Rhombotrypa subquadrata Ulrich and Bassler, Smiths. Misc. Coll. Quart, 47, 1904, pp. 45, 46 (gen. ref.).—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 877, pl. 23, figs. 3–3b.

Richmond (Waynesville): Osgood, etc., Indiana; Blanchester, Hanover, and Oregonia, Ohio.

Cotypes.—Cat. No. 43685, U.S.N.M.

RHOPALONARIA Ulrich. Genotype: R. venosa Ulrich.

Ropalonaria Ulrich, Jour. Cincinnati Soc. Nat. Hist., 2, 1879, p. 26; ibid., 5, 1882, p. 149.—Vine, Ann. Mag. Nat. Hist., 5th ser., 14, 1884, p. 84, fig. 4.

Rhopalonaria Vine, Proc. Yorkshire Geol. Polyt. Soc., 9, 1887, p. 185.—Miller, N. A. Geol. Pal., 1889, p. 321—Ulrich, Geol. Surv. Illinois, 8, 1890, p. 367.—Vine, Proc. Yorkshire Geol. Polyt. Soc., 12, 1892, p. 91.—Pocta, Syst. Sil. Centre Boheme, 8, pt. 1, 1894, p. 13.—Simpson, 14th Ann. Rep. State Geol. New York for 1894, 1897, p. 603.—Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 19.—Ulrich and Bassler, Smiths. Misc. Coll. (quart. issue), 45, 1904, pp. 266, 267.—Bassler, Bull. U. S. Geol. Surv., 292, 1906, p. 11.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 166.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 755.

Rhopalonaria attenuata Ulrich and Bassler.

Rhopalonaria attenuata Ulrich and Bassler, Smiths. Misc. Coll. (quart. issue), 45, 1904, p. 268, pl. 66, figs. 4, 5.—Bassler, Bull. U. S. Geol. Surv., 292, 1906, pp. 11, 12, pl. 4, figs. 4, 5.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 166.—Ulrich and Bassler, Maryland Geol. Surv., Low Dev., 1913, p. 259, pl. 46, fig. 1.

Clinton (Rochester): Lockport, Rochester, etc., New York; Ontario; Juniata County, Pennsylvania.

Helderbergian (Keyser): Cash Valley, Maryland.

Cotypes.—Cat. No. 43116, U.S.N.M.

RHOPALONARIA PERTENUIS Ulrich. See Corynotrypa delicatula.

Rhopalonaria venosa Ulrich.

Ropalonaria venosa Ulrich, Jour. Cincinnati Soc. Nat. Hist., 2, 1879, p. 26, pl. 7, figs. 24, 24a.

Rhopalonaria venosa Miller, N. A. Geol. Pal., 1889, fig. 511 (p. 321).—Ulrich, Geol. Minnesota, 3, 1893, p. 114, fig. 8e.—Simpson, 14th Ann. Rep. State

Rhopalonaria venosa—Continued.

Geol. New York for 1894, 1897, fig. 221 (p. 603).—Ulrich and Bassler, Smiths. Misc. Coll. Quart., 45, 1904, p. 268, pl. 66, figs. 2, 3.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 116, fig. 177a.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 879, pl. 31, figs. 7, 7a.

Richmond (Arnheim, Waynesville): Clarksville, Waynesville, etc., Ohio; Indiana; Kentucky.

Holotype and *plesiotype*.—Cat. Nos. 43113, 43115, U.S.N.M.

RHYNCHONELLA Fischer de Waldheim.

Genotype: R. loxia Fischer de Waldheim.

Rhynchonella Fischer de Waldheim, Notice des Fos. Gouv. Moscou, 1809, p. 35, pl. 2, figs. 5, 6.—Hall, 13th Rep. New York State Cab. Nat. Hist., 1860, p. 65.—Meek and Hayden, Pal. Upper Missouri, Smiths. Cont. to Knowl., 14, 172, 1864, p. 70.—Hall, Pal. New York, 4, 1867, p. 332; 20th Rep. New York, State Cab. Nat. Hist., 1867, p. 269.—Dall, Amer. Jour. Conch., 6, 1870, p. 151; ibid., 7, 1871, p. 70.—Billings, Pal. Foss., 2, 1874, p. 35.—Nettelroth, Kentucky Fossil Shells, Mem. Kentucky Geol. Surv., 1889, p. 72.—Hall and Clarke, Pal., New York, 8, pt. 2, 1893, pp. 177, 178; 13th Ann. Rep. New York State Geol., 1895, p. 822.—Schuchert, Zittel-Eastman Textb. Pal., 1, 1900, p. 324.

RHYNCHONELLA ACINUS Hall. See Camarotœchia(?) acinus.

RHYNCHONELLA ACINUS var. CONVEXA Foerste. See Camarotœchia(?) acinus convexa.

RHYNCHONELLA ACUTIROSTRIS Hall. See Zygospira(?) acutirostris.

RHYNCHONELLA ÆQUIRADIATA Miller. See Camarotœchia æquiradiata.

RHYNCHONELLA AGGLOMERATA Weller. See Camarotœchia litchfieldensis.

RHYNCHONELLA AINSLIEI Winchell. See Rhynchotrema ainsliei.

RHYNCHONELLA ALTILIS Hall. See Camarotœchia plena.

RHYNCHONELLA ANTICOSTIENSIS Billings. See Rhynchotrema anticostiensis.

RHYNCHONELLA APRINIS Miller. See Homœospira apriniformis.

RHYNCHONELLA? ARGENTEA Billings. See Camarotœchia argentea.

RHYNCHONELLA ARGENTURBICA White. See Rhynchotrema argenturbica.

Rhynchonella(?) bellaforma Nettelroth.

Rhynchonella bellaforma Nettelroth, Kentucky Fossil Shells, Mem. Kentucky Geol. Surv., 1889, p. 73.

Niagaran (Louisville): Louisville, Kentucky.

Holotype.—Cat. No. 51338, U.S.N.M.

Rhynchonella(?) bidens Hall.

Atrypa bidens Hall, Pal. New York, 2, 1852, p. 69, pl. 23, fig. 3.

Rhynchonella bidens Hall, 12th Rep. New York State Cab. Nat. Hist., 1859, p. 77.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 884, 4 figs.—Grabau, Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 194, fig. 110; Bull. New York State Mus., 45, 1901, p. 194, fig. 110.

Clinton (Lower): Lockport, New York.

Rhynchonella(?) bidentata (Hisinger).

Terebratula bidentata Hisinger, Kongl. Svenska Vet.-Akad. Handl., for 1825, 1826, p. 343, pl. 7, fig. 5.

Rhynchonella(?) bidentata—Continued.
Atrypa bidentata Hall, Pal. New York, 1852, p. 276, pl. 57, fig. 3.
Rhynchonella bidentata Hall, 12th Rep. New York State Cab. Nat. Hist., 1859, p. 77.—Grabau, Bull. New York State Mus., 45, 1901, p. 195, fig. 111; Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 195, fig. 111.
Clinton (Rochester): Lockport, New York.

RHYNCHONELLA BISULCATA Safford. See Cyclospira bisulcata.

RHYNCHONELLA BREVIROSTRIS Billings. See Anastrophia brevirostris.

RHYNCHONELLA CAMURA Billings. See Trematospira camura.

RHYNCHONELLA CAPAX Billings. See Rhynchotrema capax.

Rhynchonella colletti Miller.
Rhynchonella colletti Miller, 18th Ann. Rep. Geol. Surv. Indiana, 1894, p. 311, pl. 9, figs. 8, 9 (adv. sheets, 1892).
Niagaran: Wabash, Indiana.

Rhynchonella(?) corinthia Billings.
Rhynchonella Corinthia Billings, Pal. Fossils, 1, Geol. Surv. Canada, 1865, p. 229.
Chazyan (Quebec—N): Table Head, Newfoundland.

RHYNCHONELLA CUNEATA Hall. See Rhynchotreta cuneata americana.

RHYNCHONELLA DECEMPLICATA of authors. See Camarotœchia decemplicata.

RHYNCHONELLA DECKERENSIS Weller. See Rhynchotrema deckerense.

RHYNCHONELLA DENTATA Hall. See Rhynchotrema dentatum.

RHYNCHONELLA DUBIA Hall. See Protorhyncha dubia.

Rhynchonella? emacerata (Hall).
Atrypa emacerata Hall, Pal. New York, 2, 1852, p. 71, pl. 23, fig. 6.—Dawson, Acadian Geol., 3d ed., 1878, p. 599.
Rhynchonella emacerata Hall, 12th Rep. New York State Cab. Nat. Hist., 1859, p. 77.
Clinton: Sodus and Rochester, New York; Arisaig, Nova Scotia.

RHYNCHONELLA EVA Billings. See Camarotœchia decemplicata.

RHYNCHONELLA FORMOSA Hall. See Rhynchotrema formosum.

RHYNCHONELLA FRINGILLA Billings. See Camarotœchia fringilla.

RHYNCHONELLA GLACIALIS Billings. See Camarotœchia glacialis.

RHYNCHONELLA HYDRAULICA Whitfield. See Camarotœchia hydraulica.

RHYNCHONELLA INÆQUIVALVIS LATICOSTATA Sardeson. See Rhynchotrema increbescens laticostatum.

RHYNCHONELLA INCREBESCENS Billings. See Rhynchotrema increbescens.

RHYNCHONELLA INDIANENSIS Hall. See Camarotœchia(?) indianensis.

Rhynchonella? janea Billings.
Rhynchonella janea Billings, Cat. Sil. Fossils Anticosti, 1866, p. 43.—Foerste, Proc. Boston Soc. Nat. Hist., 24, 1890, p. 316, pl. 5, figs. 23, 24; Ohio Geol. Surv., 7, 1895, pl. 30, figs. 23, 24.—Savage, Bull. Geol. Surv. Illinois, 23, 1913, p. 83, pl. 5, fig. 3.

nchonella? janea—Continued.
Richmond (Charleton) and Gamachian (Ellis Bay): Gamache Bay, etc.; Anticosti.
Upper Medinan: Near Thebes, Illinois, and Edgewood, Missouri (Edgewood); Ontario (Cataract).

NCHONELLA KOKOMOENSIS Miller. See Wilsonia kokomoensis.

nchonella lævis Simpson.
Rhynchonella (Stenochisma) lævis Simpson, Trans. Amer. Phil. Soc., n. s., 16, 1889, p. 443, fig. 8.—Lesley, Geol. Surv. Pennsylvania, Rep. P4, 1889, p. 890, fig.
Clinton: Blair County, Pennsylvania.

NCHONELLA LAMELLATA Hall. See Camarotœchia lamellata.

NCHONELLA(?) LITCHFIELDENSIS Schuchert. See Camarotœchia litchfieldensis.

NCHONELLA MANSONII Salter. See Atrypa mansonii.

NCHONELLA MICA Billings. See Zygospira(?) mica.

NCHONELLA MINNESOTENSIS Sardeson. See Rhynchotrema minnesotensis.

NCHONELLA? MODESTA Billings. See Zygospira modesta.

NCHONELLA NEENAH Whitfield. See Rhynchotrema neenah.

NCHONELLA NEGLECTA Hall. See Camarotœchia (Stegerhynchus) neglecta.

NCHONELLA (STEGERHYNCHUS) NEGLECTA-CLIFTONENSIS. See Camarotœchia tegerhynchus) neglecta cliftonensis.

NCHONELLA NEGLECTA var. SCOBINA Meek. See Camarotœchia (Stegerhynchus) glecta.

NCHONELLA NUCLEOLATA Hall. See Uncinulus nucleolatus.

nchonella nucula (Sowerby).
Terebratula nucula Sowerby, Murchison's Sil. Syst., 1839, pl. 5, fig. 20.
Rhynchonella nucula Etheridge, Quart. Jour. Geol. Soc. London, 34, 1878, p. 595.
Silurian: England; Bessels Bay, Arctic America.

NCHONELLA NUTRIX Billings. See Camarotœchia nutrix.

NCHONELLA OBTUSIPLICATA Hall. See Camarotœchia obtusiplicata.

NCHONELLA ORIENTALIS Billings. See Camarotœchia orientalis.

NCHONELLA PERLAMELLOSA Whitfield. See Rhynchotrema perlamellosum.

NCHONELLA PHOCA Salter. See Lissatrypa phoca.

NCHONELLA PISA. See Camarotœchia pisa.

NCHONELLA PLENA Hall. See Camarotœchia plena.

NCHONELLA PLICATA Miller. See Cœlospira plicatula.

nchonella(?) plicata (Hall).
Atrypa plicata Hall, Pal. New York, 2, 1852, p. 10, pl. 4, fig. 6.—Owen (Hall), Amer. Jour. Sci. Arts, 48, 1845, p. 303, fig. 4.
Rhynchonella plicata Hall, 12th Rep. New York State Cab. Nat. Hist., 1859, p. 78.
Upper Medinan: Lockport, New York.

Rhynchonella plicatella (Linnæus).
Atrypa plicatella? Hall, Pal. New York, 2, 1852, p. 279, pl. 58, figs. 3, 4.—Miller, N. A. Geol. Pal., 1889, p. 337.
Rhynchonella plicatella Hall, 12th Rep. New York State Cab. Nat. Hist., 1859, p. 78.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 897, figs.
Niagaran: Europe; Walcott, New York.

RHYNCHONELLA PLICATULA Lesley. See Cœlospira plicatula.

RHYNCHONELLA PLICIFERA Hall. See Camarotœchia plena.

RHYNCHONELLA PROCTERI Ulrich. See Rhynchotrema procteri.

RHYNCHONELLA PYRRHA Billings. See Camarotœchia pyrrha.

RHYNCHONELLA QUADRICOSTATA Miller. See Hyattidina congesta.

RHYNCHONELLA RECURVIROSTRIS Billings. See Zygospira recurvirostris.

RHYNCHONELLA? RETICULATA Hall. See Dictyonella reticulata.

RHYNCHONELLA RIDLEYANA Safford. See Protorhyncha ridleyana.

RHYNCHONELLA ROBUSTA Hall. See Rhynchotreta robustum.

Rhynchonella rugicosta Nettelroth.
Rhynchonella rugæcosta Nettelroth, Kentucky Fossil Shells, Mem. Kentucky Geol. Surv., 1889, p. 78, pl. 32, figs. 48-51.
Niagaran (Louisville): Louisville, Kentucky.
Holotype.—Cat. No. 51320, U.S.N.M.

RHYNCHONELLA RUGOSA Billings. See Atrypa rugosa.

RHYNCHONELLA SAFFORDI Hall. See Wilsonia saffordi.

RHYNCHONELLA SAFFORDI var. DEPRESSA Nettelroth. See Wilsonia saffordi depress

RHYNCHONELLA SANCTA Sardeson. See Rhynchotrema increbescens laticostatum.

RHYNCHONELLA SCOBINA Hall and Whitfield. See Camarotœchia (Stegerhynchus) neglecta.

RHYNCHONELLA SEMIPLICATA Hall. See Camarotœchia semiplicata.

RHYNCHONELLA SORDIDA Hall. See Plectorthis (Encuclodema) sordida.

Rhynchonella sordida Hall.
Atrypa sordida Hall, Pal. New York, 1, 1847, p. 148, pl. 33, fig. 16.
Rhynchonella sordida Hall, 12th Rep. New York State Cab. Nat. Hist., 1859, p. 66.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 900, fig.
Trenton: New York(?).

RHYNCHONELLA STRICKLANDI Hall. See Uncinulus stricklandi.

RHYNCHONELLA SUBTRIGONALIS Hall. See Rhynchotrema subtrigonale.

RHYNCHONELLA TENNESSEENSIS Hall. See Uncinulus stricklandi.

RHYNCHONELLA VICINA Billings. See Camarotœchia vicina.

RHYNCHONELLA WHITIANA Miller. See Camarotœchia (Stegerhynchus) whitei.

RHYNCHONELLA WHITII Hall. See Camarotœchia (Stegerhynchus) whitei.

RHYNCHONELLA (STEGERHYNCHUS) WHITII-PRÆCURSOR Foerste. See Camarotœchia (Stegerhynchus) whitei præcursor.

RHYNCHONELLA WILSONI Roemer. See Wilsonia wilsoni.

RHYNCHORTHOCERAS Remele. Genotype: Ancistroceras breynii Remele.
Rhynchorthoceras Remele, Zeits. d. d. geol. Gesell., 33, 1881, p. 480; ibid., 34, 1882, pp. 122, 201.—Hyatt, Proc. Amer. Phil. Soc., 32, 1894, p. 511.

Rhynchorthoceras dubium Hyatt.
Rhynchorthoceras? dubium Hyatt, Proc. Amer. Phil. Soc., 32, 1894, p. 512.
Niagaran: Indiana.

RHYNCHOSPIRA Hall. Genotype: Waldheimia formosa Hall.
Rhynchospira Hall, 12th Rep. New York State Cab. Nat. Hist., 1859, p. 29; Pal. New York, 3, 1859, pp. 213, 484; 16th Rep. New York State Cab. Nat. Hist., 1863, p. 58, figs. 12–17; Pal. New York, 4, 1867, p. 276.—Hall and Clarke, ibid., 8, pt. 2, 1893, p. 108, fig. 101; 13th Ann. Rep. New York State Geol., 1895, p. 791.
Retzia Billings, Canadian Jour., 6, 1861, p. 147.

Rhynchospira(?) acadiæ (Hall).
Trematospira acadiæ Hall, Canadian Nat. Geol., 5, 1860, p. 146, fig. 4.—Dawson, Acadian Geol., 3d ed., 1878, p. 597.—Miller, N. A. Geol. Pal., 1889, p. 386, fig. 630.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 1203, fig.
Rhynchospira? acadiæ Schuchert, Bull. U. S. Geol. Surv. 87, 1897, p. 367.
Silurian: Arisaig, Nova Scotia.

RHYNCHOSPIRA APRINIFORMIS Hall. See Homœospira apriniformis.

RHYNCHOSPIRA? APRINIS Hall. See Homœospira apriniformis.

RHYNCHOSPIRA? EQUIRADIATA Hall. See Camarotœchia æquiradiata.

RHYNCHOSPIRA EVAX Hall. See Homœospira evax.

Rhynchospira excavata Grabau.
Rhynchospira excavata Grabau, Bull. New York State Mus., 69, 1903, p. 1050, fig. 9.
Helderbergian (Keyser–Manlius): Becraft Mountain, near Hudson, New York.

Rhynchospira formosa (Hall).
Waldheimia formosa Hall, 10th Ann. Rep. New York State Mus. Nat. Hist., 1857, p. 88.
Trematospira formosa Hall, Pal. New York, 3, 1859, p. 215, pl. 36, figs. 2a–t.
Rhynchospira formosa Hall, Pal. New York, 3, 1859, p. 485, pl. 95A, figs. 7–11.—Hall and Clarke, ibid., 8, pt. 2, 1893, p. 109, pl. 50, figs. 21–25.—Weller, Geol. Surv. New Jersey, Pal., 3, 1903, p. 240, pl. 21, figs. 30–34.—Maynard, Maryland Geol. Surv., Low. Dev., 1913, p. 426, pl. 72, figs. 26–30.
Helderbergian: Albany County, New York (New Scotland); Devils Backbone, Cash Valley, and Tonoloway, Maryland; Keyser, West Virginia (Keyser); New Jersey (Decker Ferry).

Rhynchospira globosa (Hall).
Waldheimia globosa Hall, 10th Ann. Rep. New York State Cab. Nat. Hist., 1857, p. 87.
Trematospira (Rhynchospira) globosa Hall, Pal. New York, 3, 1859, p. 215, pl. 36, figs. 1a–p.

Rhynchospira globosa—Continued.

Rhynchospira globosa Schuchert and Maynard, Maryland Geol. Surv., Low. Dev., 1913, p. 425, pl. 72, figs. 16–25.

Helderbergian: Albany County, New York (New Scotland); Pinto, Cash Valley, Cumberland, etc., Maryland (Keyser).

Rhynchospira(?) helena (Nettelroth).

Trematospira helena Nettelroth, Kentucky Fossil Shells, Mem. Kentucky Geol. Surv., 1889, p. 137, pl. 32, figs. 40–43.

Rhynchospira? helena Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 367.

Niagaran (Louisville): Louisville, Kentucky.

Holotype.—Cat. No. 51321, U.S.N.M.

Rhynchospira lowi Whiteaves.

Rhynchospira Lowi Whiteaves, Geol. Surv. Canada, Pal. Foss., 3, pt. 4, 1906, p. 277, pl. 25, figs. 8, 9.

Niagaran: Fawn River, Canada.

Rhynchospira præformosa Grabau.

Retzia formosa Whitfield (not Hall), Ann. New York Acad. Sci., 5, 1891, p. 512, pl. 5, figs. 15, 16; Geol. Ohio, 7, 1893, p. 413, pl. 1, figs. 15, 16.—Sherzer, Michigan Geol. Surv., 7, pt. 1, 1900, p. 224, pl. 17, figs. 15, 16.

Rhynchospira præ-formosa Grabau, Michigan Geol. Surv., Geol. Ser., 1, 1909, p. 131, pl. 20, figs. 2, 3; pl. 30, figs. 15, 16.

Lower Monroan (Greenfield): Greenfield, Ohio.

Rhynchospira(?) sinuata Hall.

Rhynchospira sinuata Hall, Canadian Nat. Geol., 5, 1860, p. 146.—Dawson, Acadian Geol., 3d ed., 1878, p. 597.

Retzia sinuata Miller, N. A. Geol. Pal., 1889, p. 367.

Silurian: Arisaig, Nova Scotia.

RHYNCHOTREMA Hall. Genotype: Rhynchonella capax Conrad.

Rhynchotrema Hall, 13th Rep. New York State Cab. Nat. Hist., 1860, p. 68, figs. 12–14.—Waagen, Pal. Indica, 13th ser., 1, 1883, p. 410.—Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 458.—Hall and Clarke, Pal. New York, 8, pt. 2, 1893, p. 182; 13th Ann. Rep. New York State Geol., 1895, p. 825.—Koken, Die Leitfossilien, Leipzig, 1896, p. 245.—Miller, N. A. Geol. Pal., 2d App., 1897, p. 763.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 281.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 893.—Schuchert, Zittel-Eastman Textb. Pal., 1910, p. 323; 2d ed., 1913, p. 396.

Stenocisma Conrad, 2d Ann. Rep. New York Geol. Surv., 1839, pp. 58, 59.—Meek and Hayden (part), Pal. Upper Missouri, Smiths. Cont. to Knowl., 14, 172, 1864, p. 16, footnote.—Hall, Pal. New York, 4, 1867, pp. 334, 335.—Waagen, Pal. Indica, 13th ser., 1, 1883, pp. 411, 431, 436.—Miller, N. A. Geol. Pal., 1890, p. 337.—Hall and Clarke, Pal. New York, 8, pt. 2, 1893, p. 187; 13th Ann. Rep. New York State Geol., 1895, p. 826.—Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 413 (see for discussion of genus).

Rhynchotrema ainsliei N. H. Winchell.

Rhynchonella ainsliei N. H. Winchell, 14th Ann. Rep. Geol. Nat. Hist. Surv. Minnesota, 1886, p. 315, pl. 2, figs. 5, 6.

Rhynchotrema ainsliei Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 459, pl. 34, figs. 1–8.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 282, fig. 343l–m.

Black River (Decorah): Minneapolis, St. Paul, etc., Minnesota; Decorah, Iowa.

ynchotrema? anticostiense (Billings).

Rhynchonella anticostiensis Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 142, fig. 119 (adv. sheets, 1862); Geol. Canada, 1863, p. 211, fig. 212.—Chamberlin, Geol. Wisconsin, 1, 1883, p. 174, fig.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 884, figs.—Whiteaves, Pal. Foss., 3, Geol. Surv. Canada, pt. 2, 1895, p. 122 (loc. occ.).

Rhynchonella(?) anticostiensis Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 464, fig. 34.

Rhynchonella anticostiensis var. Whiteaves, Pal. Foss., 3, pt. 3, 1897, p. 179.

Richmond and Gamachian: English Head, etc., Anticosti; Wilmington and Savannah, Illinois; Iowa; Wisconsin; Manitoba.

Observation.—See R. argenturbica (White) for a probable synonym.

hynchotrema argenturbica (White).

Rhynchonella argenturbica White, Wheeler's Expl. and Surv. West 100th Merid., 4, Prel. Rep., 1874, p. 14; ibid., Final Rep., 1875, p. 75, pl. 4, fig. 12.

Richmond: Silver City, New Mexico.

Observation.—Probably the same as R. anticostiense.

Cotypes.—Cat. No. 8549, U.S.N.M.

hynchotrema capax (Conrad).

Atrypa capax Conrad, Jour. Acad. Nat. Sci. Philadelphia, 8, 1842, p. 264, pl. 14, fig. 21.—Hall, Amer. Jour. Sci. Arts, 47, 1844, p. 109.

Atrypa increbescens Hall (part), Pal. New York, 1, 1847, p. 146, pl. 33, figs. 13i, 13k–13y.—Billings, Canadian Nat. Geol., 1, 1856, p. 207, figs. 15, 16.—Hall, 13th Rep. New York State Cab. Nat. Hist., 1860, p. 66, figs. 6, 7, 9–11.

Rhynchonella increbescens Hall (part), Geol. Wisconsin, 1, 1862, p. 123, pl. 11, fig. 2.

Rhynchonella capax Billings, Geol. Canada, 1863, p. 211, fig. 213.—Safford, Geol. Tennessee, 1869, p. 275, figs. 4–6.—Meek, Pal. Ohio, 1, 1873, p. 123, pl. 11, fig. 2.—Miller, Cincinnati Quart. Jour. Sci., 2, 1875, p. 17.—Roemer, Leth. geog., 1, Leth. Pal., Atlas, 1876, p. 4, fig. 13a.—White, 2d Ann. Rep. Indiana Bur. Stat. Geol., 1880, p. 489, pl. 1, figs. 9–11; 10th Rep. State Geol. Indiana, 1881, p. 121, pl. 1, figs. 9–11.—Whitfield, Geol. Wisconsin, 4, 1882, p. 263, pl. 12, figs. 26, 27.—Chamberlin, ibid., 1, 1883, pp. 155, 174, fig.—Miller, N. A. Geol. Pal., 1889, p. 368, fig. 606.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 885, figs.—Keyes, Geol. Surv. Missouri, 5, 1895, p. 99, pl. 41, fig. 12.

Rhynchotrema capax Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 462, pl. 34, figs. 30–34.—Hall and Clarke, Pal. New York, 8, pt. 2, 1893, pp. 183, 185, pl. 56, figs. 14–18, 20–27; pl. 83, fig. 31.—Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 2, 1895, p. 121; ibid., pt. 3, 1897, p. 178.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 282, fig. 343h–k.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 931, pl. 36, figs. 6–6h.—Schuchert, Zittel-Eastman Textb. Pal., 1913, p. 397, fig. 590.

Richmond: Richmond, Indiana; Oxford, etc., Ohio; Illinois; Iowa; Tennessee; Missouri; Wisconsin; Minnesota; Anticosti; Lake Winnipeg, Manitoba; Fort Churchill, Hudson Bay, etc.

RHYNCHOTREMA CAPAX MANNIENSIS Foerste. See Rhynchotrema manniense.

Rhynchotrema deckerense (Weller).

Rhynchonella deckerensis Weller, Geol. Surv. New Jersey, 3, 1903, p. 234, pl. 21, figs. 1–4.

Stenochisma deckerensis Maynard, Maryland Geol. Surv., Low. Dev., 1913, p. 349, pl. 63, figs. 1–4.

Rhynchotrema deckerense—Continued.

Helderbergian: Two miles south of Tristates, New York (Decker Ferry); Cash Valley, Devils Backbone, and Corriganville, Maryland; Keyser, West Virginia; Hyndman, Pennsylvania (Keyser).

Rhynchotrema deckerense arcticum (Holtedahl).

Stenochisma deckerensis var. arctica Holtedahl, Second Arct. Exp. "Fram", 1898–1902, No. 32, 1914, p. 21, pl. 7, figs. 7, 8.

Helderbergian (lower beds): Southwestern Ellesmereland, Arctic America.

Rhynchotrema dentatum (Hall).

Atrypa dentata Hall, Pal. New York, 1, 1847, p. 148, pl. 33, fig. 14.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 193, pl. 10, fig. 14.

Rhynchonella dentata Hall, 12th Rep. New York State Cab. Nat. Hist., 1859, p. 65.—Meek, Pal. Ohio, 1, 1873, p. 121, pl. 11, fig. 3.—Miller, Cincinnati Quart. Jour. Sci., 2, 1875, p. 18.—White, 2d Ann. Rep. Indiana Bur. State Geol., 1880, p. 490, pl. 1, figs. 12–14; 10th Rep. State Geol. Indiana, 1881, p. 122, pl. 1, figs. 12–14.—?Keyes, Geol. Surv. Missouri, 5, 1895, p. 100, pl. 41, fig. 3.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 887, figs.

Rhynchotrema dentata Hall and Clarke, Pal. New York, 8, pt. 2, 1893, p. 185.—Weller, Geol. Surv. New Jersey Pal., 3, 1903, p. 159, pl. 10, figs. 19–22.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 281, fig. 343e-g.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 932, pl. 30, figs. 7–7d.—Foerste, Bull. Sci. Lab. Denison Univ., 16, 1910, p. 29, pl. 2, fig. 16; pl. 3, fig. 12.

Trenton: Turin, New York; New Jersey.

Richmond: Dayton, Oxford, etc., Ohio; Indiana; Kentucky; Tennessee.

Rhynchotrema dentatum arnheimense Foerste.

Rhynchotrema dentata-arnheimensis Foerste, Bull. Sci. Lab. Denison Univ., 14, 1909, p. 227, pl. 4, fig. 12; 16, 1910, p. 27, pl. 3, fig. 13; Ohio Nat., 12, 1912, p. 453, pl. 22, fig. 9.

Richmond (Arnheim): Andersonville, etc., Ohio; Kentucky; Newsom, Clifton, etc., Tennessee.

Rhynchotrema formosum (Hall).

Rhynchonella formosa Hall, 10th Ann. Rep. New York State Cab. Nat. Hist., 1859, p. 76, figs. 1–5; Pal. New York, 8, 1859, p. 236, pl. 35, figs. 6a-y.

Rhynchotrema formosum Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 369.

Stenochisma formosa Maynard, Maryland Geol. Surv., Low. Dev., 1913, p. 349, pl. 62, figs. 25–29.

Helderbergian (Keyser): Devils Backbone, Cumberland, Cash Valley, Pinto, etc., Maryland; Hydman, Pennsylvania.

Rhynchotrema? illinoisense Savage.

Rynchotrema? illinoisensis Savage, Bull. Geol. Surv. Illinois, 23, 1913, p. 49, pl. 1, figs. 22, 23.

Upper Medinan (Girardeau): Near Thebes, Illinois.

Rhynchotrema inæquivalve (Castelnau).

Spirifer inæquivalvis Castelnau, Essai Syst. Sil. Amer. Sept., 1843, p. 40, pl. 14, fig. 8.

Magnesian limestone: Drummond Island, Lake Huron.

Observation.—Although the abundant Mohawkian species R. increbescens Hall is commonly quoted under the above name, there is no certainty that the two species are identical. Furthermore, the matter can not be settled without an examination of Castelnau's types, and until this is done R. increbescens is recognized as valid.

RHYNCHOTREMA INÆQUIVALVIS var. LATICOSTATA Winchell and Schuchert. See Rhynchotrema increbescens laticostatum.

RHYNCHOTREMA INÆQUIVALVIS SUBTRIGONALIS Schuchert. See Rhynchotrema subtrigonale.

Rhynchotrema increbescens (Hall).

Atrypa increbescens (part) Hall, Pal. New York, 1, 1847, pp. 146, 289, pl. 33, figs. 13a–h; ?pl. 79, fig. 6.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 192, pl. 10; figs. 13a–x.

Rhynchonella increbescens Billings (part), Canadian Nat. Geol., 1, 1856, p. 207, figs. 11–14.—Hall, 12th Rep. New York State Cab. Nat. Hist., 1859, p. 66.—Chapman, Canadian Jour., n. s., 7, 1862, p. 114, fig. 104; ibid., 8, 1863, p. 199, fig. 187.—Billings, Geol. Canada, 1863, p. 168, fig. 153.—Chapman, Expos. Min. and Geol. Canada, 1864, p. 118, fig. 104; p. 171, fig. 187.—Nettelroth, Kentucky Fossil Shells, Mem. Kentucky Geol. Surv., 1889, p. 83, pl. 34, figs. 26–29.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 890, figs.—Sardeson, Amer. Geol., 19, 1897, p. 184.

Rhynchotrema increbescens Hall and Clarke, Pal. New York, 8, pt. 2, 1893, pp. 183, 185.—Hayes and Ulrich, U. S. Geol. Surv., folio 95, illus. sheet, 1903, figs. 38, 39.—Bassler, Bull. Virginia Geol. Surv., 2a, 1909, p. 183, figs. 20, 5–8.

Hemithiris increbescens D'Orbigny, Prodr. de Pal., 1, 1849, p. 18 (gen. ref.).

Rhynchotrema inæquivalvis Winchell and Schuchert (part), Geol. Minnesota, 3, 1893, p. 459, pl. 34, figs. 12–14, 24, 25 (not 9–11, 15–23=R. minnesotensis).—Whiteaves, Pal. Foss. Geol. Surv. Canada, 3, pt. 2, 1895, p. 121; ibid., pt. 3, 1897, p. 179.—Schuchert, Proc. U. S. Nat. Mus., 22, 1900, p. 159.—Weller, Geol. Surv. New Jersey, Pal., 3, 1903, p. 159, pl. 10, figs. 15–18.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 281, figs. 243a–d.—Foerste, Bull. Sci. Lab. Denison Univ., 14, 1909, p. 314, pl. 7, figs. 10a–c.

Trematospira(?) quadriplicata Miller, Cincinnati Quart. Jour. Sci., 2, 1875, p. 60, figs. 6, 7.

Rhynchotreta quadriplicata Miller, N. A. Geol. Pal., 1889, p. 370, fig. 608.

Trenton: Middleville, etc., New York; Canada; Virginia; Kentucky; Tennessee; Illinois; Wisconsin; Minnesota; Iowa; etc.

Plesiotypes.—Cat. Nos. 35399, 51375, U.S.N.M. (Nettelroth and Hayes and Ulrich).

Rhynchotrema increbescens laticostatum (Winchell and Schuchert).

Rhynchotrema inæquivalvis var. laticostata Winchell and Schuchert, Amer. Geol., 9, April 1, 1892, p. 293; Geol. Minnesota, 3, 1893, p. 461, pl. 34, figs. 26–29.

Rhynchonella sancta Sardeson, Bull. Minnesota Acad. Nat. Sci., 3, April 9, 1892, p. 333, pl. 4, figs. 19, 20.

Rhynchonella inæquivalvis var. laticostata Sardeson, Amer. Geol., 19, 1897, p. 185.

Trenton (Prosser): Cannon Falls, Minnesota.

Rhynchotrema manniense Foerste.

Rhynchotrema capax manniensis Foerste, Jour. Geol., 11, 1903, p. 38.

Rhynchotrema manniensis Foerste, Bull. Sci. Lab. Denison Univ., 14, 1909, p. 215, pl. 7, fig. 4.

Richmond (Fernvale): Clifton, Riverside, etc., Tennessee.

Rhynchotrema minnesotense (Sardeson).

Rhynchonella minnesotensis Sardeson, Bull. Minnesota Acad. Nat. Sci., 3, 1892, p. 333, pl. 4, figs. 21–23; Amer. Geol., 18, 1896, p. 184.

Rhynchotrema minnesotensis Schuchert, Proc. U. S. Nat. Mus., 32, 1900, p. 158.

Rhynchotrema minnesotense—Continued.

Rhynchotrema inæquivalvis Winchell and Schuchert (part), Geol. Minnesota, 3, pt. 1, 1893, p. 459, pl. 34, figs. 9–11, 15–23 (not figs. 12–14, 24, 25=R. increbescens).

Black River (Platteville and Decorah): St. Paul, etc., Minnesota; Platteville, etc., Wisconsin.

Rhynchotrema neenah (Whitfield).

Rhynchonella neenah Whitfield, Geol. Wisconsin, 4, 1882, p. 265, pl. 12, figs. 19–22.—Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 465, pl. 34, figs. 35–37.

Richmond (Maquoketa): Iron Ridge, Clifton, etc., Wisconsin; Savannah, Illinois; Lattners, Iowa.

Rhynchotrema ottawaense (Billings).

Porambonites? ottawaensis Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 140, fig. 117 (adv. sheets, 1862).—Miller, N. A. Geol. Pal., 1889, p. 362, fig. 598.

Rhynchotrema ottawaensis Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 369.

Black River (Leray): Pauquette Rapids, Ottawa River, Canada.

Rhynchotrema perlamellosum (Whitfield).

Rhynchonella perlamellosa Whitfield, Ann. Rep. Geol. Surv. Wisconsin, 187, 1878, p. 73.—James, Paleontologist, 2, 1878, p. 15.—Whitfield, Geol. Wisconsin, 4, 1882, p. 265, pl. 12, figs. 23–25.

Rhynchotrema perlamellosum Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 370.

Richmond: Delafield and Iron Ridge, Wisconsin; Oxford, etc., Ohio; Indiana; Anticosti; Manitoba.

Rhynchotrema procteri Ulrich.

Rhynchonella procteri Ulrich, Amer. Geol., 1, 1888, p. 181.

Trenton (Flanagan): Danville, etc., Kentucky.

Rhynchotrema subtrigonale (Hall).

Atrypa subtrigonalis Hall, Pal. New York, 1, 1847, p. 145, pl. 33, fig. 12.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 191, pl. 10, fig. 12.

Hemithiris subtrigonalis D'Orbigny, Prodr. de. Pal., 1, 1849, p. 18 (gen. ref.).

Rhynchonella subtrigonalis Hall, 12th Rep. New York State Cab. Nat. Hist., 1859, p. 66.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 902, figs.

Rhynchotrema inæquivalvis subtrigonalis Schuchert, Proc. U. S. Nat. Mus., 22, 1900, p. 159.

Trenton: Turin, etc., New York; Kentucky; Baffin Land.

RHYNCHOTRETA Hall. Genotype: Rhynchonella cuneata Dalman.

Rhynchotreta Hall, 28th Rep. New York State Mus. Nat. Hist., 1879, p. 166, figs. 1–4; 11th Rep. State Geol. Indiana, 1882, p. 309.—Nettelroth, Kentucky Fossil Shells, Mem. Kentucky Geol. Surv., 1889, p. 84.—Miller, N. A. Geol. Pal., p. 370.—Hall and Clarke, Pal. New York, 8, pt. 2, 1893, p. 185; 13th Ann. Rep. New York State Geol., 1895, p. 825.—Williams, Bull. U. S. Geol. Surv., 165, 1900, p. 59.—Grabau, Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 192; Bull. New York State Mus., 45, 1901, p. 192.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 282.—Schuchert, Zittel-Eastman Textb. Pal., 1906, p. 323; 2d ed., 1913, p. 397.

RHYNCHOTRETA AMERICANA Foerste. See Rhynchotreta cuneata americana.

chotreta cuneata americana (Hall).

trypa cuneata Hall (not Dalman), Geol. New York; Rep. 4th Dist., 1843, Tab. Org. Rem., 13, figs. 3, 4; Pal. New York, 2, 1852, p. 276, pl. 57, fig. 4.—Billings, Canadian Nat. Geol., 1, 1856, p. 138, pl. 2, fig. 13.—Emmons, Amer. Geology, 1860, p. 108, fig.

hynchonella cuneata Hall, 12th Rep. New York State Cab. Nat. Hist., 1859, p. 77.—Billings, Geol. Canada, 1863, p. 315, fig. 323.—Safford, Geol. Tennessee, 1869, p. 315, fig. 8.

hynchotreta cuneata var. americana Hall, 28th Rep. New York State Mus. Nat. Hist., 1879, p. 167, pl. 25, figs. 29–38; 11th Rep. State Geol. Indiana, 1882, p. 310, pl. 25, figs. 29–38.—Nettelroth, Kentucky Fossil Shells, Mem. Kentucky Geol. Surv., 1889, p. 85, pl. 32, figs. 58, 59, 62, 63.—Beecher and Clarke, Mem. New York State Mus., 1, 1889, p. 47, pl. 4, figs. 12–22.—Miller, N. A. Geol. Pal., 1889, p. 370, fig. 607.—Lesley, Geol. Surv. Pennsylvania, Rep. P4, 1889, pp. 886, 908, figs.—Hall and Clarke, Pal. New York, 8, pt. 2, 1893, p. 187, pl. 56, figs. 31–38.

Rhynchotreta cuneata var. americana Grabau, Bull. New York State Mus., 45, 1901, p. 192, fig. 150; Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 192, fig. 105.—Clarke and Ruedemann, Mem. New York State Mus., 5, p. 46, pl. 4, figs. 23–25.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 283, fig. 344.

Rhynchotreta americana Foerste, Cincinnati Soc. Nat. Hist. Jour., 21, 1909, p. 11.

iagaran: Lockport, etc., New York; Ontario; Waldron, etc., Indiana; Kentucky; Tennessee; Wisconsin.

nchotreta intermedia Savage.

Rhynchotreta intermedia Savage, Bull. Geol. Surv. Illinois, 23, 1913, p. 115, pl. 7, figs. 14, 15.

pper Medinan (Channahon): Will County, Illinois.

nchotreta lepida Savage.

Rhynchotreta lepida Savage, Bull. Geol. Surv. Illinois, 23, 1913, p. 114, pl. 7, figs. 16, 17.

pper Medinan (Channahon): Will County, Illinois.

nchotreta parva Savage.

Rhynchotreta parva Savage, Bull. Geol. Surv. Illinois, 23, 1913, p. 80, pl. 5, figs. 9, 10.

pper Medinan (Edgewood-Noix): Louisiana, Missouri, and south of Hamburg, Illinois.

nchotreta robusta (Hall).

trypa robusta Hall, Pal. New York, 2, 1852, p. 71, pl. 23, fig. 7.

Rhynchonella robusta Hall, 12th Rep. New York State Cab. Nat. Hist., 1859, p. 78.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 899, figs.—Grabau, Bull. New York State Mus., 45, 1901, p. 194, fig. 109; Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 194, fig. 109.

Clinton (Irondequoit): Lockport and Niagara, New York.

nchotreta thebesensis Foerste.

Rhynchotreta thebesensis Foerste, Bull. Sci. Lab. Denison Univ., 14, 1909, p. 94, pl. 4, figs. 66a–c.—Savage, Bull. Geol. Surv. Illinois, 23, 1913, p. 80, pl. 4, figs. 19–20.

Upper Medinan (Edgewood): Thebes, Illinois; near Edgewood and Louisiana, Missouri.

Rhynchotreta thebesensis multistriata Savage.
Rhynchotreta thebesensis var. multistriata Savage, Bull. Geol. Surv., 23, 19
p. 81, pl. 4, figs. 21, 22.
Upper Medinan (Edgewood): Near Thebes, Illinois.

RHYNCHOTRETA QUADRIPLICATA Miller. See Rhynchotrema inequivalve.

Rhynchotreta simplex Foerste.
Rhynchotreta simplex Foerste, Bull. Sci. Lab. Denison Univ., 14, 1909, p.
pl. 3, fig. 46A, B.
Upper Medinan (Brassfield): Clifton, Tennessee.

RHYNCHOTROPIS Meek. See Whitella Ulrich.

RHYNOBOLUS Hall. See Rhinobolus Hall

RHYSOPHYCUS Roemer. See Rusophycus Hall.

RHYTIMYA Ulrich. Genotype: R. producta Ulri
Orthodesma Whitfield (not Hall and Whitfield), Jour. Cincinnati Soc. Nat. Hi
1, 1878, p. 139.—Miller, idem., 4, 1881, p. 76.
Sedgwickia Whitfield (not McCoy), ibid., 1, 1878, p. 140.
Rhytimya Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 618; Geol. Surv. Ohio,
1893, p. 688,—Miller and Faber, Jour. Cincinnati Soc. Nat. Hist., 17, p. 140
Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 984.—Grab
and Shimer, N. A. Index Fossils, 1, 1909, p. 526.

Rhytimya byrnesi (Miller).
Orthodesma byrnesi Miller, Jour. Cincinnati Soc. Nat. Hist., 4, 1881, p. 76, pl.
figs. 7a–b.
Rhytimya byrnesi Ulrich, Geol. Surv. Ohio, 7, 1893, p. 689, pl. 56, figs. 4,
Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 1019, pl.
figs. 3–3a.
Richmond: Richmond, Indiana (Whitewater); Weisburg, Indiana, and Bl
chester, Ohio (Waynesville).
Plesiotype.—Cat. No. 46298, U.S.N.M.

Rhytimya compressa Ulrich.
Rhytimya compressa Ulrich, Geol. Surv. Ohio, 7, 1893, p. 692, pl. 56, fig. 13.
Maysville (Fairmount): Cincinnati, Ohio, and vicinity.
Holotype.—Cat. No. 46299, U.S.N.M.

Rhytimya convexa Ulrich.
Rhytimya convexa Ulrich, Geol. Surv. Ohio, 7, 1893, p. 691, pl. 56, figs. 2, 3.
Maysville (Fairmount): Cincinnati, Ohio, and vicinity.
Holotype.—Cat. No. 46300, U.S.N.M.

Rhytimya emma (Billings).
Cyrtodonta Emma Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 150,
130 (adv. sheets, 1862).—Billings, Cat. Sil. Foss. Anticosti, Geol. Sur
Canada, 1866, p. 13 (loc. ref.).
Cypricardites Emma Miller, N. A. Geol. Pal., 1889, p. 476 (gen. ref.).
Rhytimya emma Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 619 (gen. ref.).
Richmond (English Head and Charleton): English Head, etc., Anticosti.

Rhytimya faberi (Miller).
Orthodesma faberi Miller, N. A. Geol. Pal., 1889, p. 497, fig. 873.
Richmond: Versailles, Indiana.

ytimya? kagawongensis Foerste.

Rhytimya kagawongensis Foerste, Bull. Sci. Lab. Denison Univ., 17, 1914, pl. 4, fig. 5.

Richmond: Kagawong, Manitoulin Island, Lake Huron.

ytimya lunulata (Whitfield).

Sedgewickia(?) lunulata Whitfield, Jour. Cincinnati Soc. Nat. Hist., 1, 1878, p. 140, pl. 6, figs. 8, 8a.

Rhytimya lunulata Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 619 (gen. ref.).

Richmond: Clinton County, Ohio.

ytimya mickleboroughi (Whitfield).

Orthodesma mickleboroughi Whitfield, Jour. Cincinnati Soc. Nat. Hist., 1, 1878, p. 139, pl. 6, fig. 7.

Rhytimya mickleboroughi Ulrich, Geol. Surv. Ohio, 7, 1893, p. 690, pl. 56, figs. 14–15.—Grabau and Shimer, N. A. Index Fossils, 1 (3), 1909, p. 526, fig. 714.

Orthodesma cymbula Miller and Faber, Jour. Cincinnati Soc. Nat. Hist., 17, 1894, p. 143, pl. 8, figs. 7–9.—Miller, N. A. Geol. Pal., 2d App., 1897, p. 783, fig. 1445.

Maysville (Fairmount): Cincinnati, Ohio, and vicinity.

Plesiotype.—Cat. No. 46301, U.S.N.M.

Observation.—See Modiolopsis? terminalis and Orthodesma contractum Hall.

ytimya munda (Miller and Faber).

Orthodesma mundum Miller and Faber, Jour. Cincinnati Soc. Nat. Hist., 15, 1892, p. 82, pl. 1, figs. 11, 12.

Maysville (Corryville): Cincinnati, Ohio.

ytimya œhana Ulrich.

Rhytimya œhana Ulrich, Geol. Surv. Ohio, 7, 1893, p. 689, pl. 56, fig. 1.—Foerste, Bull. Sci. Lab. Denison Univ., 17, 1914, p. 307, pl. 1, fig. 11.

Cincinnatian: Cincinnati, Ohio, and vicinity (Maysville-McMillan); Chambly, Quebec (Pulaski).

Holotype.—Cat. No. 46302, U.S.N.M.

ytimya producta Ulrich.

Rhytimya producta Ulrich, Geol. Surv. Ohio, 7, 1893, p. 688, pl. 56, figs. 6–9.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 526, fig. 713.

Maysville (Fairmount): Cincinnati, Ohio, and vicinity.

Cotypes.—Cat. Nos. 46303, 46304, U.S.N.M.

ytimya radiata Ulrich.

Rhytimya radiata Ulrich, Geol. Surv. Ohio, 7, 1893, p. 692, pl. 56, figs. 10–12.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 526, fig. 712.

Orthodesma ashmani Miller and Faber, Jour. Cincinnati Soc. Nat. Hist., 17, 1894, p. 146, pl.8, figs. 12–14.—Miller, N. A. Geol. Pal., 2d App., 1897, p. 783, fig. 1446.

Eden (Southgate): Cincinnati, Ohio, and vicinity.

Cotypes.—Cat. No. 46305, U.S.N.M.

hytimya recta Whiteaves.

Rhytimya recta Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 3, 1897, p. 186, pl. 20, fig. 7.

Black River or Richmond: Reindeer Island, Lake Winnipeg, Canada.

Rhytimya scaphula (Miller and Faber).

Orthodesma scaphula Miller and Faber, Jour. Cincinnati Soc. Nat. Hist., 17, 1894, p. 145, pl. 8, figs. 10, 11.—Miller, N. A. Geol. Pal., 2d App., 1897, p. 783, fig. 1447.

Maysville (Fairmount): Cincinnati, Ohio, and vicinity.

Rhytimya sinuata Ulrich.

Rhytimya sinuata Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 619, pl. 36, figs. 46, 47.

Orthodesma sinuatum Miller, N. A. Geol. Pal., 2d App., 1897, p. 784 (gen. ref.).

Trenton (Prosser): Near Wykoff, Minnesota.

Holotype.—Cat. No. 46306, U.S.N.M.

RIBEIRELLA Shubert and Waagen. See Technophorus Miller.

RIBEIRIA Sharpe. Genotype: R. pholandiformis Sharpe.

Ribeiria Sharpe, Quart. Jour. Geol. Soc. London, 9, 1853, p. 157.—Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, pp. 339, 340 (Ribeirina proposed in case his species should be distinct).—Whitfield, Bull. Amer. Mus. Nat. Hist., 1, 1886, p. 343.—Miller, N. A. Geol. Pal., 1889, p. 566.—Cleland, Bull. Amer. Pal., 3, 1890, p. 132 (260).—Jones, Rep. 59th Meeting British Assoc. Adv. Sci., 1890, p. 66.—Schubert and Waagen, Jahrb. d. k. k. geol. Reichsanst, 53, 1903, pp. 33, 41.—Clarke, Mem. New York State Mus., 6, 1904, p. 406, expl. pl.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 374.—Bassler, Zittel-Eastman Textb. Pal., 1913, p. 733.

Ribeiria calcifera Billings.

Ribeiria? calcifera Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 340, figs. 326a–c.—Miller, N. A. Geol. Pal., 1889, p. 566, fig. 1055.—Schubert and Waagen, Jahrb. geol. Reichsanst, 53, 1903, p. 42, pl. 1, figs. 1a–c.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 374, fig. 1675.

Canadian (Beekmantown): Leeds and Grenville Counties, Quebec.

Ribeiria compressa Whitfield.

Ribeiria compressa Whitfield, Bull. Amer. Mus. Nat. Hist., 1, 1886, p. 344, pl. 33, figs. 3–5.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 90, fig.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 374.

Canadian (Beekmantown): Fort Cassin, Vermont.

Ribeiria? longiuscula Billings.

Ribeiria? longiuscula Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 341, fig. 327.—Schubert and Waagen, Jahrb. geol. Reichsant, 53, 1903, p. 43, pl. 1, fig. 2.

Canadian (Beekmantown): Leeds and Grenville Counties, Canada.

Ribeiria? nuculitiformis Cleland.

Ribeiria? nuculitiformis Cleland, Bull. Amer. Pal., 3, 1900, p. 133 (261), pl. 16, figs. 10–14.

Canadian (Tribes Hill): Near Fort Hunter, New York.

Ribeiria nuculitiformis equilatera Cleland.

Ribeira nuculitiformis var. equilatera Cleland, Bull. Amer. Pal., 3, 1900, p. 134 (262), pl. 16, fig. 15.

Canadian (Tribes Hill): Fort Hunter, New York.

Ribeiria parva Collie.

Ribeiria parva Collie, Bull. Geol. Soc. Amer., 14, 1903, p. 419, pl. 59, figs. 4, 5.

Canadian (Beekmantown): Bellefonte, Pennsylvania.

Ribeiria turgida Cleland.
Ribeiria turgida Cleland, Bull. Amer. Pal., 4, 1903, p. 12, pl. 3, figs. 6, 7.
Canadian (Tribes Hill): Fort Hunter and Tribes Hill, New York.

Ribeiria ventricosa Whitfield.
Ribeiria ventricosa Whitfield, Bull. Amer. Mus. Nat. Hist., 1, 1886, p. 344, pl. 33, figs. 1, 2.—Lesley, Geol. Surv. Pennsvlvania, Rep. P 4, 1889, p. 909, fig.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 375.
Canadian (Beekmantown): Fort Cassin, Vermont.

RIBEIRINA Billings. See Ribeiria Sharpe.

RŒMERASTER Stürtz. See Urasterella McCoy.

ROMINGERIA Nicholson. Genotype: Aulopora umbellifera Billings.
Quenstedtia Rominger, Geol. Surv. Michigan, 3, pt. 2, 1876, p. 71 (preoccupied).
Romingeria Nicholson, Tab. Corals Pal. Period, 1879, p. 114.—Roemer, Leth. geog., pt. 1, Leth. Pal., 1883, p. 449.—Miller, N. A. Geol. Pal., 1889, p. 203.—Beecher, Trans. Connecticut Acad. Arts Sci., 8, 1891, pp. 212, 218.—Sardeson, Neues Jahrb. Min., Geol., Pal., Beilage-Band, 10, 1896, pp. 251, 327.—Lambe, Cont. Can. Pal., Geol. Surv. Canada, 4, pt. 1, 1899, p. 46.—Pocta, Syst. Sil. du Centre Boheme, 8, pt. 2, 1902, p. 265.—Beecher, Amer. Jour. Sci., 16, 1903, p. 1.—Grabau and Shimer, N. A. Index Fossils, 1, 1906, p. 79; Zittel-Eastman Textb. Pal., 2d ed., 1900, p. 101; 2d ed., 1913, p. 116.

Romingeria niagarensis (Rominger).
Quenstedtia niagarensis Rominger, Geol. Surv. Michigan, 3, pt. 2, 1876, p. 72, pl. 33, fig. 3.
Romingeria Niagarensis Roemer, Leth. geog., pt. 1, Leth. Pal., 1883, p. 450 (gen. ref.).
Niagaran: Point Detour, Michigan; Masonville, Iowa.

Romingeria? trentonensis Weller.
Romingeria? trentonensis Weller, Geol. Surv. New Jersey, Pal., 3, 1903, p. 138, pl. 6, fig. 5.
Black River (Jacksonburg): Near Stillwater, New Jersey.

Romingeria umbellifera (Billings).
Aulopora umbellifera Billings, Canadian Jour., 4, 1859, p. 119.—Nicholson, Pal. Ontario, 1874, p. 43, pl. 6, fig. 4.—Whiteaves, Rep. Progr., Geol. Surv. Canada, 1877, p. 317.
Quenstedtia umbellifera Rominger, Geol. Surv. Michigan, 3, pt. 2, 1876, p. 71, pl. 33, fig. 3.
Romingeria umbellifera Nicholson, Tabulate Corals Pal. Period, 1879, p. 116, fig. 19.—Lambe, Contr. Can. Pal., Geol. Surv. Canada, 1899, p. 46.—Beecher, Amer. Jour. Sci., 4th ser., 16, 1903, pp. 2–6, pls. 1–4.—Grabau and Shimer, N. A. Index Fossils, 1, 1906, p. 79.—Grabau, Michigan Geol. Surv., Geol. Ser., 1, 1909, p. 108, pl. 14, fig. 7.
Middle Devonian: Ontario and New York.
Upper Monroan (Amherstburg): Detroit River, opposite Amherstburg, Ontario.

Romingeria uva Davis.
Romingeria uva Davis, Kentucky Fossil Corals, Geol. Surv. Kentucky, pt. 2, 1885, pl. 75, figs. 6, 7.
Niagaran (Louisville): Louisville, Kentucky.

Romingeria vannula Davis.
Romingeria vannula Davis, Kentucky Fossil Corals, Geol. Surv. Kentucky, pt. 2, 1885, pl. 75, figs. 1–3, 5.
Niagaran (Louisville): Louisville, Kentucky.
Cotype.—Cat. No. 52743, U.S.N.M.

ROPALONARIA VENOSA Ulrich. See Rhopalonaria venosa.

ROSACILLA Roemer. See Berenicea Lamouroux.

ROSENELLA Nicholson. Genotype: R. glenelgensis Park
Rosenella Parks, Univ. Toronto Studies (Geol. Series), No. 4, 1907, p. 23.

Rosenella glenelgensis Parks.
Rosenella glenelgensis Parks, Univ. Toronto Studies (Geol. Series), No. 4, 190 p. 23, pl. 2, fig. 3; pl. 3, fig. 4; pl. 6, fig. 5.
Niagaran (Guelph): Durham and Elora, Ontario.

Rosenella? manitoulinensis Parks.
Rosenella(?) manitoulinensis Parks, Univ. Toronto Studies (Geol. Series), No. 5, 1908, p. 42, pl. 12, fig. 3; pl. 14, fig. 8.
Niagaran: Manitoulin Island; drift at Ann Arbor, Michigan.

ROUVILLIGRAPTUS Barrois. See Holograptus Holm.

RUEDEMANNIA Foerste. See Lophospira Whitfield.

RUSICHNITES Dawson. See Rusophycus Hall.

RUSOPHYCUS Hall. Genotype: R. clavatum Hall.
Rusophycus Hall, Pal. New York, 2, 1852, p. 23.—Dawson, Canadian Nat. and Geol., n. s., 1, 1864, p. 363.—Nathorst, Kongl. Sven. Vet.-Akad. Handl., 18, No. 7, 1881, p. 33.—Dawson, Quart. Jour. Geol. Soc. London, 46, 1890, p. 599.—James, Jour. Cincinnati Soc. Nat. Hist., 7, 1885, pp. 153–155.—Miller, N. A. Geol. Pal., 1889, p. 138.
Rhysophycus Roemer, Leth. geog., 1 Theil, Leth. Pal., Erste Lief, 1880, p. 130.
Rusichnites Dawson, Can. Nat. Geol., 1, 1861, p. 363.

Rusophycus asperum Miller and Dyer.
Rusophycus asper Miller and Dyer, Jour. Cincinnati Soc. Nat. Hist., 1, 1878, p. 25, pl. 1, figs. 5, 5a.
Cruziana aspera James, ibid., 7, 1885, p. 156.
Eden (Economy): Cincinnati, Ohio, and vicinity.

Rusophycus biloba (Vanuxem).
Fucoides biloba Vanuxem, Nat. Hist. New York, pt. 3, 1842, p. 79, fig. 11, No. 1; ibid., pt. 4, 1843, p. 77, fig. 1; tab. ill. 9, fig. 1.—Owen, Amer. Jour. Sci. Arts, 48, 1845, p. 307, fig. 1.—Lincklaen, 14th Rep. New York State Cab. Nat. Hist., 1861, pl. 6, fig. 13.
Rusophycus bilobatus Hall, Pal. New York, 2, 1852, p. 24, pl. 9, figs. 1a–c.—Rogers, Geol. Pennsylvania, 2, 1858, p. 822, fig. 626.—Emmons, Man. Geol., 1860, p. 107, fig. 1.—Dana, Man. Geol., 1863, p. 235, fig. 365.—Nicholson, Rep. Pal. Prov. Ontario, pt. 2, 1875, p. 37, fig. 14.—Miller, N. A. Geol. Pal., 1889, p. 914, fig.
Rhysophycus bilobatus Delgado, Etude Bilobites, Syst. Sil. Portugal, Lisbonne, Suppl., 1887, p. 65, pl. 8, fig. 5.
Cruziana bilobata James, Jour. Cincinnati Soc. Nat. Hist., 7, 1885, pp. 154–57.
Clinton: Oneida County, New York.

RUSOPHYCUS BILOBATUS Hall. See Rusophycus biloba.

RUSOPHYCUS CARLEYI (James).
Cruziana carleyi James, Jour. Cincinnati Soc. Nat. Hist., 7, 1885, p. 155, pl. 8, fig. 1.
Eden or Maysville: Bantam, Clermont County, Ohio.

Rusophycus clavatum Hall.
Rusophycus clavatus Hall, Pal. New York, 2, 1852, p. 23, pl. 8, figs. 1a–b.
Clinton: New Hartford, Oneida County, New York.

Rusophycus clintonense (Dawson).
Rusichnites (Psammichnites) clintonensis Dawson, Quart. Jour. Geol. Soc. London, 46, 1890, p. 598, fig. 3.
Rhysophycus clintonense Miller, N. A. Geol. Pal., 1st App., 1892, p. 666 (gen. ref.).
Upper Medinan (Cataract): Hamilton, Ontario.

Rusophycus grenvillense Billings.
Rusophycus Grenvillensis Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 101 (adv. sheets, 1862).—Dawson, Canadian Nat. Geol., n. s., 1, 1864, p. 363, figs.
Rusichnites grenvillensis Dawson, Quart. Jour. Geol. Soc. London, 46, 1890, p. 597, fig. 1.
Chazy sandstone: Head of Grenville Canal, Canada.

Rusophycus pudicum Hall.
Rusophycus pudicus Hall, Pal. New York, 2, 1852, p. 24, pl. 8, fig. 6a–b.
Cruziana pudica James, Jour. Cincinnati Soc. Nat. Hist., 7, 1885, pp. 154, 157.
Clinton: New Hartford, New York.

Rusophycus subangulatum (Hall).
Rusophycus subangulatus Hall, Pal. New York, 2, 1852, p. 23, pl. 8, fig. 2a–b.
Cruziana subangulata James, Jour. Cincinnati Soc. Nat. Hist., 7, 1885, p. 154.
Clinton: New Hartford, New York.

SABELLARITES Dawson. Genotype: Sabellarites trentonensis Dawson.
Sabellarites Dawson, Quart. Jour. Geol. Soc. London, 46, 1890, p. 605.—Miller, N. A. Geol. Pal., 1st App., 1892, p. 703.

Sabellarites phosphaticus Dawson.
Sabellarites phosphaticus Dawson, Quart. Jour. Geol. Soc. London, 46, 1890, p. 608.
Canadian? (Levis?): Kamouraska, Quebec.

Sabellarites trentonensis Dawson.
Sabellarites trentonensis Dawson, Quart. Jour. Geol. Soc. London, 46, 1890, p. 607, fig. 11, p. 608.
Black River: Pointe Clair, near Montreal, Quebec.

SACCOCRINUS Hall. See Periechocrinus Austin.

SACCOCRINUS BENEDICTI Miller. See Habrocrinus benedicti.

SACCOCRINUS CHRISTYI Meek and Worthen. See Periechocrinus whitfieldi.

SACCOCRINUS HOWARDI Miller. See Habrocrinus howardi.

SACCOCRINUS PYRIFORMIS Miller. See Periechocrinus urniformis.

SACCOCRINUS SACCULUS Meek and Worthen. See Periechocrinus whitfieldi.

SACCOCRINUS SEMIRADIATUS Miller. See Macrostylocrinus semiradiatus.

SACCOCRINUS SPECIOSUS Roemer. See Periechocrinus dubius.

Saccophycus James. Genotype: Saccophycus intortus James.
Saccophycus James, Paleontologist, No. 3, 1879, p. 17; Jour. Cincinnati Soc. Nat. Hist., 7, 1885, p. 157.

Saccophycus intortus James.
Saccophycus intortus James, Paleontologist, No. 3, 1879, p. 17.
Maysville?: Near Lebanon, Ohio.
Observation.—Not recognizable without a restudy of the type.

SACCOSPONGIA Ulrich. Genotype: S. rudis Ulrich.
Saccospongia Ulrich, Amer. Geol., 3, 1889, pp. 235, 242.—Miller, N. A. Geol. Pal., 1889, p. 164.

Saccospongia danvillensis Ulrich.
Saccospongia danvillensis Ulrich, Amer. Geol., 3, 1889, p. 243.
Trenton (Perryville): Boyle, Mercer, Franklin, and Fayette Counties, Kentucky.
Cotypes.—Cat. No. 46570, U.S.N.M.

Saccospongia rudis Ulrich.
Saccospongia rudis Ulrich, Amer. Geol., 3, 1889, p. 242, fig. 7.
Trenton (Cynthiana): Near Lexington and Frankfort, Kentucky.
Cotypes.—Cat. No. 46571, U.S.N.M.

SACTOCERAS Hyatt. See Loxoceras McCoy.

SACTOCERAS CANADENSE Whiteaves. See Actinoceras (Paractinoceras) canadense.

SÆRICHNITES Billings. Genotype: S. abruptus Billings.
Særichnites Billings, Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 73.—Miller, N. A. Geol. Pal., 1889, p. 453.

Særichnites abruptus Billings.
Særichnites abruptus Billings, Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 73.
Richmond (English Head): Near English Head, etc., Anticosti.

SAFFORDIA Ulrich. Genotype: S. ventralis Ulrich.
Saffordia Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 625.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 384.

Saffordia modesta (Ulrich).
Cypricardites? modestus Ulrich, Amer. Geol., 10, 1892, p. 100, pl. 7, figs. 5–7.
Saffordia modesta Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 627, pl. 41, figs. 29–31.—Schuchert, Proc. U. S. Nat. Mus., 22, 1900, p. 163.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 385, fig. 489c.
Trenton: Oshkosh, Wisconsin; Goodhue and Fillmore Counties, Minnesota (Prosser); Baffin Land.
Holotype.—Cat. No. 46307, U.S.N.M.

Saffordia sulcodorsata (Ulrich).
Cuneamya sulcodorsata Ulrich, 19th Ann. Rep. Geol. Nat. Hist. Surv. Minnesota, 1892, p. 248, fig. 32.
Saffordia sulcodorsata Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 626, pl. 41, figs. 32, 33.

Saffordia sulcodorsata—Continued.
Cypricardites sulcodorsatus Miller, N. A. Geol. Pal., 2d App., 1897, p. 781 (gen. ref.).
Richmond (Maquoketa): Spring Valley, Minnesota.
Holotype.—Cat. No. 46308, U.S.N.M.

Saffordia ulrichi Ruedemann.
Saffordia ulrichi Ruedemann, Bull. New York State Mus., 162, 1912, p. 107, pl. 6, figs. 17, 18.
Trenton (Schenectady): Schenectady, New York.

Saffordia ventralis Ulrich.
Saffordia ventralis Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 626, pl. 41, figs. 34-41.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 385, figs. 489a-b.
Cypricardites ventralis Miller, N. A. Geol. Pal., 2d App., 1897, p. 781 (gen. ref.).
Richmond (Maquoketa): Spring Valley, Minnesota; Iron Ridge, Wisconsin.
Cotypes.—Cat. Nos. 46309, 46310, U.S.N.M.

SAGENELLA Hall. See Berenicea Lamouroux.

Sagenella ambigua Walcott. Not recognizable.
Sagenella ambigua Walcott, Trans. Albany Inst., 10, 1883, p. 22, pl. 1, figs. 3, 3a.
Utica: Trenton, New York.

SAGENELLA ELEGANS Hall. See Berenicea consimilis.

SAGENELLA MEMBRANACEA Hall. See Berenicea consimilis.

SAGENELLA STRIATA James. See Escharopora acuminata.

SAGENOCRINITES Austin. See Sagenocrinus Austin.

SAGENOCRINUS Austin. Genotype: Actinocrinus expansus Phillips.
Sagenocrinites Austin, Ann. Mag. Nat. Hist., 11, 1843, p. 205.
Sagenocrinus Pictet, Traite Pal., 4, 1857, p. 323.—Angelin, Icon. Crin. Suec., 7, 1878.—Œhlert, Bull. Soc. Geol. France, 7, 1879, p. 8.—Zittel, Handb. Pal., 1, 1879, p. 375.—Waschmuth and Springer, Proc. Acad. Nat. Sci. Philadelphia, 1881 (Rev. Pal., pt. 2), pp. 184-201; ibid, 1885, p. 321; ibid., 1888, p. 357; ibid., 1890, p. 388.—Jaekel, Zeits. d. d. geol. Ges., 49, Verhandl., 1897, p. 46.—Bather, Treatise on Zool., 1900, p. 190.—Springer, Jour. Geol., 14, 1906, p. 518; Mono. Crin. Flex. Smiths. Inst. (in press); Zittel-Eastman Textb. Pal., 2d ed., 1913, p. 204.

Sagenocrinus americanus Springer.
Sagenocrinus americanus Springer, Amer. Geol., 30, 1902, p. 88, fig.; Mono. Crin. Flex. Smiths. Inst. (in press).
Niagaran (Waldron): Waldron, Indiana.

Sagenocrinus clarki Springer.
Sagenocrinus clarki Springer, Mono. Crin. Flex. Smiths. Inst. (in press).
Niagaran (Brownsport): Decatur County, Tennessee.

SALPINGOSTOMA (Roemer). Genotype: S. megalostoma Eichwald.
Bellerophon and Bucania (part) of authors.
Salpingostoma Roemer, Leth. Geog., 1, Leth. Pal. Atlas, 1876, pl. 5, fig. 12.—Zittel, Handb. Pal., 2, 1882, p. 184.—Koken, Neues Jahrb. Min. Geol. Pal., 6, Beilage-Band, 1889, p. 381, 385.—Newton, Geol. Mag., dec. 3, 9, 1892, p. 338.—Koken, Die Leitfossilien, Leipzig, 1896, p. 99.—Whidborne, Mon. Dev. Fauna South England, 3, Pal. Soc., 1896, p. 66.—Ulrich and Scofield, Geol.

SALPINGOSTOMA—Continued.

Minnesota, 3, pt. 2, 1897, pp. 851-897.—Koken, Bull. Acad. Imp. Sci. St. Petersburg, 7, p. 129; Neues Jahrb. Min. Geol. Pal., 1, 1898, p. 6, 7.—Pilsbry, Zittel-Eastman Textb. Pal., 1, 1900, p. 445.—Clarke and Ruedemann, Mem. New York State Mus., 5, 1903, p. 56.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 952.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 614.—Dall, Zittel-Eastman Textb. Pal., 2d ed., 1913, p. 521.

Salpingostoma boreale Whiteaves.

Salpingostoma boreale Whiteaves, Geol. Surv. Canada, Ann. Rep., n. s., 14, App. F, 1904, p. 49; ibid., Pal. Foss., 3, pt. 4, 1906, p. 258, pl. 28, figs. 10, 11.

Niagaran: Ekwan River, Canada.

Salpingostoma buelli (Whitfield).

Bucania buelli Whitfield, Ann. Rep. Geol. Surv. Wisconsin, 1878, p. 76.—Chamberlin, Geol. Wisconsin, 1, 1883, p. 158.—Koken, Neues Jahrb. Min. Geo Pal., 6, Beilage-Band, 1889, p. 386.

Bucania (Tremanotus?) buelli Whitfield, Geol. Wisconsin, 4, 1882, p. 224, pl. 6, figs. 12-14.—Whiteaves, Canadian Rec. Sci., 5, 1893, p. 322 (loc. occ.).

Salpingostoma Buelli Whiteaves, Pal. Foss., 3, pt. 3, Geol. Surv. Canada, 1897, p. 189.—Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 900, pl. 47, fig 34-37.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 614, fig. 82a-c

Black River: Beloit and Janesville, Wisconsin; Rockton and Dixon, Illinois; Minneapolis, etc., Minnesota; Lower Fort Garry, Manitoba.

Plesiotype.—Cat. No. 45980, U.S.N.M.

Salpingostoma buelli kentuckyense Ulrich and Scofield.

Salpingostoma buelli var. kentuckyensis Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 901.

Trenton (Curdsville): Mercer County, Kentucky.

Cotypes.—Cat. No. 45981, U.S.N.M.

Salpingostoma canadense (Billings).

Bellerophon Canadensis Billings, Cat. Sil. Fossils Anticosti, Geol. Surv. Canada, 1866, p. 18, fig. 6; p. 56.

Salpingostoma canadensis Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 851 (gen. ref.).

Richmond (English Head, Charleton) and Gamachian (Ellis Bay): Macasty Bay, etc., Anticosti.

Salpingostoma expansum (Hall).

Bucania expansa Hall, Pal. New York, 1, 1847, p. 186, pl. 40, figs. 7a-d.—Mill Cincinnati Quart. Jour. Sci., 1874, 1, p. 307.—Lesley, Geol. Surv. Pennsyl vania, Rep. P 4, 1889, p. 96, figs.

Bellerophon expansus Emmons, Amer. Geology, 1, pt. 2, 1855, p. 164, pl. 6, fig.

Bucania (Bellerophon) expansa Hall, Rep. Geol. Surv. Wisconsin, 1862, p. fig. 1.

Salpingostoma expansum Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana 1908, p. 973, pl. 40, figs. 1-1b.—Grabau and Shimer, N. A. Index Fossils, 1909, p. 614.

Trenton: Watertown, New York; Canada; etc.

Salpingostoma fraternum (Billings).

Bellerophon fraternus Billings, Cat. Sil. Fossils Anticosti, Geol. Surv. Canada, 1866, p. 19.

Salpingostoma fraternum—Continued.
Salpingostoma fraternum Ulrich and Schofield, Geol. Minnesota, 3, pt. 2, 1897, p. 851 (gen. ref.).
Richmond (English Head): English Head, Anticosti.

Salpingostoma imbricatum Ulrich and Scofield.
Salpingostoma imbricata Ulrich and Schofield, Geol. Minnesota, 3, pt. 2, 1897, p. 902, pl. 82, figs. 21 and 22.
Bucania imbricata Miller, N. A. Geol. Pal., 2d App., 1897, p. 766 (gen. ref.).
Richmond (Maquoketa): Near Spring Valley, Minnesota.
Holotype.—Cat. No. 45982, U.S.N.M.

Salpingostoma richmondense Ulrich.
Salpingostoma richmondensis Ulrich, Geol. Minnesota, 3, 1897, p. 903, pl. 67, figs. 39, 40.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 974, pl. 39, figs. 7, 7a.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 614, fig. 823d–e.
Bucania richmondensis Miller, N. A. Geol. Pal., 1897, p. 766 (gen. ref.).
Richmond (Whitewater): Richmond, Indiana.
Holotype.—Cat. No. 45983, U.S.N.M.

Salpingostoma sculptile Ulrich and Scofield.
Salpingostoma sculptilis Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 902, pl. 82, figs. 16–20.
Bucania sculptilis Miller, N. A. Geol. Pal., 2d App., 1897, p. 766 (gen. ref.).
Trenton (Prosser): Goodhue County; near Fountain, Minnesota.
Cotype.—Cat. No. 45984, U.S.N.M.

SALTERASTER Sturtz. See Urasterella McCoy.

SALTERELLA Billings. Genotype: S. rugosa Billings.
Salterella Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 17 (adv. sheets, 1861); Geol. Vermont, 2, p. 954; Rep. Econ. Geol., etc., Vermont, 1862, p. 226; Amer. Jour. Sci. Arts, 2d ser., 33, 1862, p. 105.—Barrande, Syst. Sil. du Centre Boheme, 3, 1867, p. 137.—Zittel, Handb. Pal., 2, 1882, p. 315.—Walcott, Bull. U. S. Geol. Surv., 30, 1886, p. 143.—Miller, N. A. Geol. Pal., 1889, p. 520.

Salterella billingsi Safford.
Salterella Billingsi Safford, Geol. Tennessee, 1869, p. 289.
Stones River (Murfreesboro): Murfreesboro, Tennessee.

SANNIONITES Barrande. See Cameroceras Conrad.

SAO(?) LAMOTTENSIS WHITFIELD. See Glaphurus pustulatus.

SARCINULA COSTATA Owen. See Lyellia glabra.

SARCINULA (PORITES) GLABRA Owen. See Lyellia glabra.

SARCINULA? OBSOLETA Hall. See Columnaria (Palæophyllum) stokesi.

SARCINULA ORGANUM Goldfuss. See Syringophyllum organum.

SAUKIA Walcott. Genotype: Dikelocephalus lodensis Whitfield.
Saukia Walcott, Smiths. Misc. Coll., 57, No. 13, 1914, p. 373.

Saukia stosei Walcott.
Dikelocephalus hartti Walcott in Stose, U. S. Geol. Surv., folio No. 170, 1909, p
Saukia stosei Walcott, Smiths. Misc. Coll., 57, No. 13, 1914, p. 384, pl. 69, f
3-5; pl. 70, figs. 12, 12a.
Lower Ozarkian or Upper Cambrian (Conococheague): Near Scotland, Frank
County, Pennsylvania.

SCÆVOGYRA Whitfield. Genotype: S. swezeyi Whitfie
Scævogyra Whitfield, Ann. Rep. for 1877, Wisconsin Geol. Surv., 1878, p.
Geol. Wisconsin, 4, 1882, p. 198.—Koken, Neues Jahrb. Min., Geol., Pal.,
Beilage-Band, 1889, p. 402.—Miller, N. A. Geol. Pal., 1889, p. 425.—Berk
Amer. Geol., 21, 1898, p. 286.

Scævogyra elevata Whitfield.
Scævogyra elevata Whitfield, Ann. Rep. for 1877, Wisconsin Geol. Surv., 1878,
62; Geol. Wisconsin, 4, 1882, p. 199, pl. 3, fig. 11.—Chamberlin, Geol. W
consin, 1, 1883, p. 142, fig.—Sardeson, Jour. Geol., 11, 1903, p. 479, fig. 9.
Ozarkian (Mendota): East of Baraboo, Wisconsin.

Scævogyra obliqua Whitfield.
Scævogyra obliqua Whitfield, Ann. Rep. for 1877, Wisconsin Geol. Surv., 18
p. 63; Geol. Wisconsin, 4, 1882, p. 199, pl. 3, fig. 10.—Chamberlin, G
Wisconsin, 1, 1883, p. 142, fig.
Ozarkian (Mendota): East of Baraboo, Wisconsin.

SCÆVOGYRA PRIMORDIALE Berkey. See Platyceras primordiale.

Scævogyra swezeyi Whitfield.
Scævogyra Swezeyi Whitfield, Ann. Rep. for 1877, Wisconsin Geol. Surv., 1
p. 62; Geol. Wisconsin, 4, 1882, p. 198, pl. 3, figs. 7-9.—Chamberlin, G
Wisconsin, 1, 1883, p. 142, fig.—Sardeson, Jour. Geol. 11, 1903, p. 479, fi
Ozarkian (Mendota): East of Baraboo, Wisconsin.

SCALITES Emmons. Genotype: S. angulatus Emm
Scalites Emmons, Geol. Rep. New York, 1842, p. 312.—D'Orbigny, Prodr
Pal., 1, 1849, p. 7.—Woodward, Man. Mollusca, pt. 1, 1851, p. 147.—Emm
Amer. Geology, 1, pt. 2, 1855, p. 155.—Pictet, Traite de Pal., 2d ed., 3, 1
p. 163.—Salter, Geol. Surv. Canada, dec. 1, 1859, p. 10.—Billings, Cana
Nat. Geol., 4, 1859, pp. 448-450.—Meek and Worthen, Geol. Surv. Illino
1868, p. 317.—Zittel, Handb. Pal., 2, Munich, 1882, p. 182.—Koken, N
Jahrb. Min., Geol., Pal., 6, Beilage-Band, 1889, p. 321, 348.—Miller, N
Geol. Pal., 1889, p. 425.—Ulrich and Schofield, Geol. Minnesota, 3, p
1897, p. 933.—Pilsbry, Zittel-Eastman Textb. Pal., 1, 1900, p. 458.—Gr
and Shimer, N. A. Index Fossils, 1, 1909, p. 630.—Dall, Zittel-Eas
Textb. Pal., 2d ed., 1913, p. 527.

Scalites angulatus Emmons.
Scalites angulatus Emmons, Geology Rep. New York, 1842, p. 312.—Hall,
New York, 1, 1847, p. 27.—Pictet, Traite de Pal., 2d ed., 3, 1855, p. 16
62, fig. 25.—Emmons, Amer. Geology, 1855, p. 159, pl. 4, fig. 20; Ma
Geol., 1860, p. 93, fig. 78.—Lincklaen, 14th Rep. New York State Cab.
Hist., 1861, p. 40, pl. 1, fig. 6.—Miller, N. A. Geol. Pal., 1889, p. 425, fig. 7
Koken, Neues Jahrb. Min., Geol., Pal., 6, Beilage-Band, 1889, p. 3
Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 931, fig.—Ulrich
Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 933, fig. 4.—Raymond,
Carnegie Mus., 4, 1908, p. 183, pl. 68, figs. 13-16; fig. 3, 4.—Grabau
Shimer, N. A. Index Fossils, 1, 1909, p. 630, fig. 854a.
Chazyan (Day Point): Chazy, etc., New York.
Plesiotype.—Cat. No. 45985, U.S.N.M.

ALITES ELEVATUS Miller. See Eotomaria elevata.

ALITES LATICINCTUS Miller. See Omospira laticincta.

ALITES PLANISTRIA Emmons. See Raphistoma stamineum.

ALITES STAMINEA Emmons. See Raphistoma stamineum.

ALITES STRIATA Emmons. See Raphistoma striatum.

ENELLA Billings. Genotype: S. reticulata Billings.
Scenella Billings, Canadian Nat. Geol., 4, 1872, p. 479; Pal. Foss., Geol. Surv. Canada, 2, pt. 1, 1874, p. 77.—Whiteaves, ibid., 3, pt. 1, 1884, p. 32.—Walcott, Bull. U. S. Geol. Surv., 30, 1886, p. 125.—Miller, N. A. Geol. Pal., 1889, p. 392.—Ulrich and Schofield, Geol. Minnesota, 3, pt. 2, 1897, pp. 822–837.—Berkey, Amer. Geol., 21, 1898, p. 278.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 608.

enella affinis Ulrich and Scofield.
Scenella affinis Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 840, pl. 61, figs. 36, 37.
Black River (Decorah) and Trenton (Prosser): Kenyon, Wykoff, etc., Minnesota.
Holotype.—Cat. No. 45986, U.S.N.M.

enella affinis obsoleta Ulrich and Scofield.
Scenella affinis var. obsoleta Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 841.
Trenton (Prosser): Cannon Falls, Minnesota.
Cotypes.—Cat. No. 45987, U.S.N.M.

enella? alta (Whitfield).
Metoptoma alta Whitfield, Bull. Amer. Mus. Nat. Hist., 2, 1889, p. 44, pl. 7, figs. 12, 13.—Koken, Neues Jahrb. Min., Geol., Pal., 6, Beilage-Band, 1889, p. 478.—Calvin, Bull. Lab. Nat. Hist. State Univ. Iowa, 2, 1892, p. 191; Amer. Geol., 10, 1892, p. 146.
Scenella? alta Ulrich and Schofield, Geol. Minnesota, 3, pt. 2, 1897, p. 838 (gen. ref.).
Canadian: Beekmantown, New York (Beekmantown); Northeastern Iowa (Oneota).

enella analoga (Walcott).
Metoptoma? analoga Walcott, Mon. U. S. Geol. Surv., 8, 1884, p. 84, pl. 1, figs. 11, 11a.
Upper Pogonip: Pogonip Ridge, Eureka District, Nevada.
Holotype.—Cat. No. 17358, U.S.N.M.

enella beloitensis Ulrich and Scofield.
Scenella beloitensis Ulrich and Scofield, Geol. Minn., 3, pt. 2, 1897, pl. 61, figs. 33 and 34.
Black River (Platteville): Beloit, Wisconsin.
Plastotype.—Cat. No. 46532, U.S.N.M.

enella cassinensis Bassler (new name).
Tryblidium conicum Whitfield, Bull. Amer. Mus. Nat. Hist., 1, 1886, p. 306, pl. 24, figs. 26, 27, 32, 33; ibid., 3, p. 29, pl. 1, figs. 3, 4.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1234, figs.—Seely, Vermont State Geol. Rep., 7, 1910, pl. 60, figs. 9, 10; pl. 62, figs. 26, 27, 32, 33.

Scenella cassinensis—Continued.
Scenella conica Ulrich and Scofield (not Whiteaves, 1894), Geol. Minnesota, 3, pt. 2, 1897, p. 826 (gen. ref.).
Canadian (Beekmantown): Fort Cassin, Vermont.

Scenella compressa Ulrich and Scofield.
Scenella compressa Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 840, pl. 61, figs. 38–41.
Conchopeltis compressa Miller, N. A. Geol. Pal., 1897, p. 766 (gen. ref.).
Black River (Platteville): Minneapolis, Minnesota.
Holotype.—Cat. No. 45988, U.S.N.M.

SCENELLA CONICA Ulrich and Scofield. Scenella cassinensis.

Scenella conica Whiteaves.
Scenella conica Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 1, 1884, p. 32, pl. 5, figs. 2, 2a.—Miller, N. A. Geol. Pal., 1889, p. 392, fig. 648.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 933, figs.—Whiteaves, Pal. Foss., Geol. Surv. Canada, pt. 2, 1895, p. 69.
Niagaran (Guelph): Durham, Ontario.

Scenella magnifica Ulrich and Scofield.
Scenella magnifica Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 839, pl. 82, figs. 7–9.
Black River (Platteville): Cannon Falls, Minnesota.
Plastotype.—Cat. No. 45989, U.S.N.M.

Scenella montrealensis (Billings).
Metoptoma Montrealensis Billings, Pal. Foss., 1, 1865, p. 394, fig. 371.
Scenella montrealensis Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 838.—Raymond, Ann. Carnegie Mus., 4, 1908, p. 173, pl. 46, figs. 9, 10; pl. 55, fig. 1.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 608, fig. 812, 813.
Chazyan (Day Point—Valcour): Montreal, Quebec; etc.; Chazy, etc., New York; Isle La Motte, Vermont.
Plesiotype.—Cat. No. 53633, U.S.N.M.

Scenella obtusa (Sardeson).
Conchopeltis (Metoptoma) obtusa Sardeson, Bull. Minnesota Acad. Nat. Sci., 3, 1892, p. 336, pl. 6, fig. 17.
Scenella obtusa Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 841, pl. 82, fig. 10.
Black River (Decorah): Minneapolis, Minnesota.

Scenella orithyia (Billings).
Metoptoma orithyia Billings, Pal. Foss., 1, Geol. Surv. Canada, p. 38, fig. 40a, b (adv. sheets, 1862); Geol. Canada, Geol. Surv. Canada, 1863, p. 276, fig. 282a, b.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 402, figs.—Sardeson, Jour. Geol., 11, 1903, p. 479, fig. 7.
Canadian (Beekmantown): Phillipsburg, Quebec.

Scenella pretensa Raymond.
Scenella pretensa Raymond, Amer. Jour. Sci., 4th ser., 20, 1905, p. 375; Ann. Carnegie Mus., 4, 1908, p. 173, pl. 46, figs. 11–13.
Chazyan: Chazy, New York (Day Point); Lenoir, Tennessee (Lenoir).

lla radialis Ulrich and Scofield.
enella radialis Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 841, pl. 61, figs. 31, 32.
renton (Prosser): St. Paul, Minnesota.
lastotype.—Cat. No. 45590, U.S.N.M.

lla robusta Raymond.
enella robusta Raymond, Amer, Jour. Sci., 4th ser., 20, 1905, p. 376; Ann. Carnegie Mus., 4, 1908, p. 174, pl. 47, figs. 1, 2, 3.
hazyan: Valcour Island, New York (Crown Point); Lenoir, Tennessee (Lenoir).

lla superba (Billings).
etoptoma superba Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 173, fig. 155.
cenella superba Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 838, pl. 61, fig. 35.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 608.
onchopeltis Minnesotensis Walcott, 28th Rep. New York State Mus. Nat. Hist., 1875, p. 94, doc. ed., 1877.
lack River: Pauquettes Rapids, Ottawa River, Canada (Leray); Cannon Falls, Minnesota (Platteville).
lesiotype.—Cât. No. 45991, U.S.N.M.

lla? venillia (Billings).
etoptoma Venillia Billings, Pal. Foss. 1, Geol. Surv. Canada, 1865, p. 88, text fig. 80 (adv. sheets, 1862).
cenella? venilla Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 838 (gen. ref.).
zarkian? (Levis-erratics): Point Levis, Quebec.

ELLOPORA Ulrich. Genotype: S. radiata Ulrich.
cenellopora Ulrich, Jour. Cincinnati Soc. Nat. Hist., 5, 1882, p. 150.—Miller, N. A. Geol. Pal., 1889, p. 322.—Ulrich, Geol. Surv. Illinois, 8, 1890, p. 368.—Pocta, Syst. Sil. Centre Boheme, 8, pt. 1, 1894, p. 13.—Ulrich, Zittel's Textb. Pal. (Engl. ed.), 1896, p. 268.—Simpson, 14th Ann. Rep. State Geol. New York for 1894, 1897, p. 593.—Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 24.—Bassler, Bull. U. S. Geol. Surv., 77, 1911, p. 107.—Zittel-Eastman Textb. Pal., 1913, p. 328.

llopora radiata Ulrich.
cenellopora radiata Ulrich, Jour. Cincinnati Soc. Nat. Hist., 5, 1882, p. 158, pl. 6, figs. 6–6b.—Simpson, 14th Ann. Rep. State Geol. New York for 1894, 1897, figs. 194, 195 (p. 593).
hazyan (Ottosee): Near Knoxville, Tennessee.
olotype.—Cat. No. 43289, U.S.N.M.

IDIUM Hall. Genotype: Orthis insignis Hall.
kenidium Hall, 13th Rep. New York State Cab. Nat. Hist., 1860, p. 70, figs. 1–5; Amer. Jour. Sci. Arts, 2d ser., 31, 1861, p. 293.—Zittel, Handb. Pal., 1, 1880, p. 677.—Davidson, Mon. British Foss. Brach., 5, Dev. Suppl., Pal. Soc., 1882, p. 48.—Waagen, Pal. Indica, 13th ser., 1, 1884, p. 549.—Miller, N. A. Geol. Pal., 1889, p. 371.—Koken, Die Leitfossilien, Leipzig, 1896, p. 235.
cenidium Œhlert, Bull. Soc. d'Études Sci. d'Angers, 1887, p. 4, extract.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 241.—Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 381.—Hall and Clarke, 11th Ann. Rep. New York State Geol., 1894, p. 276.—Schuchert, Zittel-Eastman Textb. Pal., 1, 1900, p. 320.—Grabau, Bull. New York State Mus., 45, 1901, p. 189; Buffalo Soc. Nat. Sci., 7, 1901, p. 189.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 270.—Schuchert, Zittel-Eastman Textb. Pal., 1913, p. 393.

Scenidium anthonense Sardeson.

Skenidium halli Safford, Geol. Tennessee, 1869, p. 287 (undefined).

Scenidium halli Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 242, pl. 7A, figs. 33-39.

Skenidium anthonensis Sardeson, Bull. Minnesota Acad. Nat. Sci., 3, 1892, p. 333, pl. 4, fig. 7.

Scenidium anthonensis Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 381, pl. 30, figs. 20-23.—Weller, Geol. Surv. New Jersey Pal., 3, 1903, p. 157, pl. 10, figs. 5-7.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 270, figs. 324h-k.

Black River: Minneapolis, Cannon Falls, etc., Minnesota; Dixon, Illinois; Jac[illegible]sonburg, New Jersey.

Scenidium bassleri Foerste.

Scenidium bassleri Foerste, Bull. Sci. Lab. Denison Univ., 14, 1909, p. 72, pl. 4, figs. 68A, B.

Niagaran (Waldron): Newsom, Tennessee.

SCENIDIUM HALLI Hall and Clarke. See Scenidium anthonense.

Scenidium(?) merope (Billings).

Orthis Merope Billings, Geol. Surv. Canada Pal. Foss., 1, 1865, p. 139, fig. 116 (adv. sheets, 1862).

Scenidium? merope Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 242, pl. 7A, figs. 31, 32.

Trenton: Ottawa, Ontario; Burgin, Kentucky.

Scenidium? nodocostatum Rowley.

Skenidium? nodocostatum Rowley, Amer. Geol., 34, 1904, p. 280, pl. 16, figs. 60-63.

Niagaran (Bainbridge): Six miles west of St. Marys, Ste. Genevieve County, Missouri.

Scenidium pyramidale Hall.

Orthis pyramidalis Hall, Pal. New York, 2, 1852, p. 251, pl. 52, fig. 2.

Skenidium pyramidalis Hall, 13th Rep., New York State Cab. Nat. Hist., 1860, p. 70.

Scenidium pyramidale Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 242, pl. 7, figs. 29, 30; pl. 7A, figs. 40-42.—Grabau, Bull. New York State Mus., 45, 1901, p. 189, fig. 100; Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 189, fig. 100.

Skenidium pyramidata Hall, 2d Ann. Rep. New York State Geol., 1883, pl. 37, figs. 29, 30.

Clinton (Rochester): Lockport, New York.

SCEPTROPORA Ulrich. Genotype: S. facula Ulrich.

Sceptropora Ulrich, Amer. Geol., 1, 1888, p. 228; Contr. Micro-Pal. Cambro-Sil., pt. 2, 1889, p. 46.—Miller, N. A. Geol. Pal., 1889, p. 322.—Ulrich, Geol. Sur. Illinois, 8, 1890, p. 400; Zittel's Textb. Pal. (Eng. ed.), 1896, p. 281.—Simpson, 14th Ann. Rep. State Geol. New York for 1894, 1897, p. 548.—Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 143.—Bassler, Bull. U. S. Nat. Mus., 77, 1911, p. 152; Zittel-Eastman Textb. Pal., 1913, p. 343.

Sceptropora facula Ulrich.

Sceptropora facula Ulrich, Amer. Geol., 1, 1888, p. 229, fig. 1; Contr. Micro-Pal. Cambro-Sil., pt. 2, 1889, p. 46, fig. 2; Geol. Sur. Illinois, 8, 1890, p. 401, fig. 15.—Whiteaves, Pal. Foss., 3, pt. 2, 1895, p. 117.—Simpson, 14th Ann. Rep. State Geol. New York for 1894, 1897, fig. 116 (p. 549).—Bassler, Bull. U. S. Nat. Mus., 77, 1911, p. 153, fig. 74.

Sceptropora facula—Continued.
Richmond: Stony Mountain, Manitoba; Anticosti (English Head, Charleton); Wilmington (Fernvale) and Savannah (Maquoketa), Illinois; Tennessee; Missouri; Wyoming; etc.; Borkholm, Esthonia, Russia.
Cotypes.—Cat. No. 43478, U.S.N.M.

Sceptropora fustiformis Ulrich.
Sceptropora fustiformis Ulrich, Contr. Micro-Pal. Cambro-Sil., pt. 2, 1889, p. 46.
Upper Medinan (Cataract): Hamilton, Ontario.
Cotypes.—Cat. No. 43474, U.S.N.M.

SCHIZAMBON Walcott. Genotype: S. typicalis Walcott.
Schizambon Walcott, Mon. U. S. Geol. Surv., 8, 1884, p. 69.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pp. 113, 167.—Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 360.—Hall and Clarke, 11th Ann. Rep. New York State Geol., 1894, p. 253.—Miller, N. A. Geol. Pal., 1889, p. 370.—Hall and Clarke, 45th Ann. Rep. New York State Mus., 1892, pp. 569–570.—Walcott, Smiths. Misc. Coll., 53, 1908, pl. 11, pp. 142, 144; U. S. Geol. Surv., Mon. 51, pt. 1, 1912, p. 622.—Schuchert, Zittel-Eastman Textb. Pal., 1910, p. 309; 2d ed., 1913, p. 376.
Schizambonia Œhlert, Fischer's Manuel Conch., 1887, p. 1266.

Schizambon canadensis (Ami).
Siphonotreta scotica Whiteaves, Amer. Jour. Sci., 3d ser., 24, 1882, p. 278; Canadian Nat. Geol., 10, 18–83, p. 396.—Ami, Canadian Rec. Sci., 3, p. 104.
Siphonotreta scotica var. canadensis Ami, Ottawa Nat., 1, 1887, p. 124.
Schizambon(?) fissus var. canadensis Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 115, pl. 4, figs. 32–36.
Trenton: Gloucester, Ontario (Collingwood); Rural Cemetary, near Albany, New York (Canajoharie).

Schizambon? dodgei Winchell and Schuchert.
Schizambon(?) dodgii Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 361, pl. 30, figs. 5–7.
Trenton: Sandyhill, New York.

Schizambon duplicimuratus Hudson.
Schizambon duplicimuratus Hudson, Bull. New York State Mus., 80, 1905, p. 284, pl. 5, figs. 6, 7.—Raymond, Ann. Carnegie Mus., 7, 1911, p. 228, pl. 34, figs. 23–25.
Chazyan: Valcour Island and Chazy, New York (Valcour); Mingan Islands, Quebec (Mingan).

SCHIZAMBON(?) FISSUS var. CANADENSIS Hall and Clarke. See Schizambon canadensis.

Schizambon? lockei Winchell and Schuchert.
Schizambon(?) lockii Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 362, pl. 30, figs. 8–10.
Maysville (Fairmount): Cincinnati, Ohio.

Schizambon manitouensis Walcott.
Schizambon manitouensis Walcott, Mon. U. S. Geol. Surv., 51, 1912, p. 623, pl. 84, figs. 3, 3a–e.
Canadian: Williams Canyon, Manitou, near Colorado Springs, Colorado.
Holotype and *plesiotypes.*—Cat. No. 52224, U.S.N.M.

Schizambon priscus Matthew.

Schizambon priscus Matthew, Bull. Nat. Hist. Soc. New Brunswick, 4, pt. 4, No. 19, 1901, pp. 277-278, pl. 5, figs. 4a-d; Geol. Surv. Canada, Rep. Cambrian Rocks Cape Breton, 1903, pp. 187-189, pl. 11, figs. 6a-d.—Walcott Mon. U. S. Geol. Surv., 51, 1912, p. 623, pl. 84, figs. 2-2e.

Canadian (Bretonian—Div. C 3c): McLeod Brook, etc., Cape Breton, Nov Scotia; Navy Island, St. John Harbor, New Brunswick.

Schizambon typicalis Walcott.

Schizambon typicalis Walcott, Mon. U. S. Geol. Surv., 8, 1884, p. 70, pl. 1, fig. 3.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 114, fig. 65, pl. 4, figs. 27-30.—Hall and Clarke, 11th Ann. Rep State Geol. New York, 1892, p. 253, pl. 4, figs. 18-20.—Walcott, Mon. U. S. Geol. Surv., 51, 1912, p. 624, pl. 84, figs. 1, 1a-d.

Lower Pogonip: East of Hamburg Ridge, Eureka County, Nevada. Also Upper Cambrian of Utah.

Holotype and *plesiotypes*.—Cat. No. 24556, U.S.N.M.

SCHIZAMBONIA Œhlert. See Schizambon Walcott.

SCHIZOCRANIA Hall and Whitfield. Genotype: Orbicula? filosa Hall.

Schizocrania Hall and Whitfield, Pal. Ohio, 2, 1875, p. 71.—Zittel, Handb. Pal., 1, 1880, p. 665.—Miller, N. A. Geol. Pal., 1889, p. 371.—Beecher, Amer. Jour. Sci., 3d ser., 44, 1892, p. 148.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pp. 142, 168.—Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 369.—Hall and Clarke, 11th Ann. Rep. New York State Geol., 1894, p. 259.—Koken, Die Leitfossilien, Leipzig, 1896, p. 230.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1907, p. 894.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 202.—Schuchert, Zittel-Eastman Textb. Pal., 1900, p. 309; 2d ed., 1913, p. 377.

Schizocrania filosa Hall.

Orbicula? filosa Hall, Pal. New York, 1, 1847, p. 99, pl. 30, fig. 9.

Orbiculoidea filosa Emmons, Amer. Geology, 1, pt. 2, 1855, p. 200, pl. 8, fig. 9.

Crania filosa Hitchcock, Geol. Vermont, 1, 1862, p. 292, fig. 196.

Obolus filosus Safford, Geol. Tennessee, 1869, p. 275, fig. 9.

Trematis filosa Billings, Geol. Canada, 1863, p. 159, fig. 126.—Hall, 23d Rep. New York State Cab. Nat. Hist., 1873, pl. 13, figs. 21, 22.—Miller, Cincinnati Quart. Jour. Sci., 2, 1875, p. 15.

Schizocrania filosa Hall and Whitfield, Pal. Ohio, 2, 1875, p. 73, pl. 1, figs. 12-15.—Miller, N. A. Geol. Pal., 1889, p. 371, fig. 609.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 143, pl. 4G, figs. 22-30.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 934, figs.—Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 370, fig. 31; pl. 29, figs. 29-31.—Crane, Geol. Mag., dec. 4, 2, 1895, pl. 5, fig. 18.—Huene, Verh. d. Russ.-Kais. Mineral Ges. zu St. Petersburg, 36, 1899, p. 336, fig. 9.—Weller, Geol. Surv. New Jersey Pal., 3, 1903, p. 146, pl. 9, figs. 3, 4.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 202, fig. 236a.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 933, pl. 34, figs. 8, 8a.—Foerste, Bull. Sci. Lab. Denison Univ., 16, 1910, p. 40.

Trenton: Middleville, etc., New York; New Jersey; Minnesota; Kentucky; Ontario.

Maysville and Richmond: Cincinnati, Ohio, and vicinity; Anticosti, etc.

Schizocrania(?) rudis Hall.
Trematis rudis Hall, 23d Rep. New York State Cab. Nat. Hist., 1873, p. 243, pl. 13, fig. 19 (separates, 1871).
Schizocrania(?) rudis Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 144, pl. 4G, fig. 21.—Foerste, Jour. Geol., 11, 1903, p. 706; Bull. Sci. Lab. Denison Univ., 16, 1910, p. 40, pl. 3, fig. 22a–b.
Trenton (Hermitage): Clifton, Tennessee.

Schizocrania schucherti Hall and Clarke.
Schizocrania schucherti Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pp. 143, 179, pl. 4G, figs. 31–33; 48th Rep. New York State. Mus., 2, for 1895, p. 334, pl. 3, figs. 5–7; 14th Rep. State Geol. New York for 1894, p. 334, pl. 3, figs. 5–7.
Trenton (Upper): Covington, Kentucky.

SCHIZOCRINUS Hall. Genotype: S. nodosus Hall.
Schizocrinus Hall, Pal. New York, 1, 1847, p. 81.—Pictet, Traite de Pal., 2d ed., 4, 1857, p. 328.—Hitchcock, Geol. Vermont, 1, for 1861, 1862, p. 291.—Zittel, Handb. Pal., 1, 1879, p. 371.—Wachsmuth and Springer, Proc. Acad. Nat. Sci. Philadelphia, 1881, p. 394 (Rev. Pal., pt. 2, p. 220).—Miller, N. A. Geol. Pal., 1889, p. 281.

SCHIZOCRINUS NODATUS Hitchcock. See Schizocrinus nodosus.

Schizocrinus nodosus Hall.
Schizocrinus nodosus Hall, Pal. New York, 1, 1847, p. 81, pl. 27, figs. 1a–b; Geol. Lake Sup. Land. Dist., Foster and Whitney's Rep., 1851, p. 208, pl. 25, figs. 2a–c.—Miller, N. A. Geol. Pal., 1889, p. 281, fig. 427.
Scyphocrinus nodosus D'Orbigny, Prodr. de Pal., 1, 1849, p. 21 (gen. ref.).—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 224.
Schizocrinus nodatus Hitchcock, Geol. Vermont, 1, for 1861, 1862, p. 291.
Trenton: Glen Falls, Middlevile, Trenton Falls, etc., New York.

Schizocrinus striatus Hall.
Schizocrinus striatus Hall, Pal. New York, 1, 1847, p. 316, pl. 28, figs. 4a–c.
Scyphocrinus striatus D'Orbigny, Prodr. de Pal., 1, 1849, p. 24 (gen. ref.).
Trenton: Middleville, New York.

SCHIZOLOPHA Ulrich. Genotype: S. textilis Ulrich.
Schizolopha Ulrich, Geol. Minnesota, 3, pt. 2, 1897, pp. 952–991.—Koken, Neues Jahrb. Min. Geol. Pal., 1, 1898, p. 18.—Cumings, 32d Ann. Rep. Dep. Geol. Nat Res. Indiana, 1908, p. 952.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 637.

Schizolopha moorei Ulrich.
Schizolopha moorei Ulrich, Geol. Minnesota, 3, pt. 2, 1897, p. 992, pl. 65, figs. 31–37.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 975, pl. 41, figs. 7, 7c.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 637, fig. 865.
Maysville: Cincinnati, Ohio, and vicinity.
Richmond: Richmond, Indiana; Oxford, etc., Ohio.
Cotypes.—Cat. Nos. 45992, 45993, U.S.N.M.

Schizolopha(?) prosseri Kindle and Breger.
Schizolopha(?) prosseri Kindle and Breger, 28th Rep. Dep. Geol. Nat. Res. Indiana, 1904, p. 467, pl. 12, fig. 3.
Niagaran: Delphi, Indiana.

Schizolopha textilis Ulrich.
Schizolopha textilis Ulrich, Geol. Minnesota, 3, pt. 2, 1897, p. 992, pl. 65, fig. 30.
Murchisonia textilis Miller, N. A. Geol. Pal., 2d App., 1897, p. 768 (gen. rel.).
Trenton (Catheys): Nashville, Tennessee.
Holotype.—Cat. No. 45992, U.S.N.M.

SCHIZONEMA Foerste. See Orthostrophia subgenus Schizoramma Foreste.

SCHIZOPHORIA King. Genotype: Orthis resupinata (Martin).
Schizophoria King, Mon. Permian Fossils, Pal. Soc., 1850, p. 106.—Hall, Bull. Geol. Soc. Amer., 1, 1889, p. 21.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 211; 11th Ann. Rep. New York State Geol., 1894, p. 272.—Schuchert, Zittel-Eastman Textb. Pal., 1913, p. 383.

Schizophoria senecta Hall and Clarke.
Orthis (Schizophoria) senecta Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 343, pl. 6A, figs. 23, 24; 48th Rep. New York State Mus., 2, for 1895, 1897, p. 342, pl. 4, figs. 22, 23; 14th Rep. State Geol. New York for 1894, 1897, p. 342, pl. 4, figs. 22, 23.
Clinton: Reynales Basin, Niagara County, New York.

SCHIZORAMMA Foerste. See Orthostrophia subgenus Schizoramma.

SCHIZOSTOMA COMPLANATUM Clarke and Ruedemann. See Ophileta complanata.

SCHIZOSTOMA LEVATUM Clarke and Ruedemann. See Ophileta levata.

SCHIZOTRETA Kutorga. Genotype: S. elliptica Kutorga.
Schizotreta Kutorga, Verhand. Kais. Min. Gessel. zu St. Petersburg, 7, 1848, p. 273.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pp. 135, 169.—Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 365.—Hall and Clarke, 11th Ann. Rep. New York State Geol., 1894, p. 257.—Miller, N. A. Geol. Pal., Sec. App., 1897, p. 763.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 205.

Schizotreta conica (Dwight).
Orbiculoidea conica Dwight, Amer. Jour. Sci., 3d ser., 19, 1880, p. 452, pl. 21, figs. 1-11; Proc. Poughkeepsie Soc. Nat. Sci., 1880, p. 19.
Schizotreta conica Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pp. 126, 135, pl. 4E, figs. 6-8; pl. 4F, fig. 7.
Trenton: Near Newburg, New York.

Schizotreta minutula Winchell and Schuchert.
Schizotreta minutula Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 365, fig. 28.
Crania minutula Miller, N. A. Geol. Pal., 2d App., 1897, p. 760 (gen. rel.).
Richmond (Maquoketa): Near Granger, Minnesota.

Schizotreta ovalis Hall and Clarke.
Orbiculoidea (Schizotreta) ovalis Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 177, pl. 4E, figs. 4, 5; 48th Rep. New York State Mus., 2, 1895, p. 332, pl. 2, figs. 12, 13; 14th Rep. New York State Geol. for 1894, 1897, p. 332, pl. 2, figs. 12, 13.
Trenton: Middleville, New York.

Schizotreta papilliformis Ruedemann.
Schizotreta papilliformis Ruedemann, Bull. New York State Mus., 42, 1901, p. 570, pl. 1, figs. 3-5.
Chazyan (Normanskill): Mount Moreno, near Hudson, New York.

Schizotreta pelopea (Billings).
Discina Pelopea Billings, Pal. Fossils, 1, Geol. Surv. Canada, 1865, p. 52, fig. 56 (adv. sheets, 1862); Geol. Canada, 1863, p. 159, fig. 124.
Discina concordensis Sardeson, Bull. Minnesota Acad. Nat. Sci., 3, 1892, p. 328, pl. 4, figs. 13, 14.
Schizotreta pelopea, Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 365, pl. 29, figs. 26–28.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 205, fig. 241a–b.
Trenton: Montreal, etc., Canada; Minnesota; Iowa; Wisconsin.
?Richmond (Maquoketa): Spring Valley, Minnesota.

chizotreta tenuilamellata (Hall).
Orbicula tenuilamellata Hall, Pal. New York, 2, 1852, p. 250, pl. 53, fig. 3.
Discina forbesi Nicholson (not Davidson), Pal. Prov. Ontario, 1875, p. 62.
Discina solitaria Ringueberg, Amer. Nat., 1882, p. 175, figs. a–e.
Discina clara Spencer, Bull. Univ. State Missouri, 1, 1884, p. 56; Trans. St. Louis Acad. Sci., 4, 1886, p. 606, pl. 8, fig. 5.
Schizotreta tenuilamellata Beecher, Amer. Jour. Sci., 3d ser., 41, 1891, p. 357, pl. 17, fig. 11.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 205.
Orbiculoidea (Schizotreta?) tenuilamellata Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pp. 127, 135, pl. 4E, figs. 9–11; pl. 4F, figs. 2–6.
Niagaran: Lockport, New York (Lockport); Hamilton, Ontario (Rochester); Arisaig, Nova Scotia (Arisaig).

SCHMIDTELLA Ulrich. Genotype: S. crassimarginata Ulrich.
Schmidtella Ulrich, Amer. Geol., 10, 1892, p. 269.—Miller, N. A. Geol. Pal., 1st App., 1892, p. 711.—Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 639.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 343.

Schmidtella affinis Ulrich.
Schmidtella affinis Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 641, pl. 43, figs. 45–47.
Trenton (Prosser): Near Cannon Falls, Minnesota.
Cotypes.—Cat. No. 41296, U.S.N.M.

Schmidtella brevis Ulrich.
Schmidtella brevis Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 642, pl. 45, figs. 34, 35.
Black River (Decorah): Near Fountain, Minnesota.
Holotype.—Cat. No. 41299, U.S.N.M.

Schmidtella crassimarginata Ulrich.
Schmidtella crassimarginata Ulrich, Amer. Geol., 10, 1892, p. 269, pl. 9, figs. 27–30.—Miller, N. A. Geol. Pal., 1st App., 1892, p. 711, fig. 1265.—Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 640, pl. 43, figs. 42–44.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 343, figs. 1656o–q.—Raymond, Ann. Carnegie Mus., 7, 1911, p. 256, fig. 27.
Black River (Platteville): Mineral Point, Wisconsin; Dixon, Illinois.
Chazyan (Valcour): Valcour Island, New York.
Holotype.—Cat. No. 41295, U.S.N.M.

Schmidtella crassimarginata ventrilabiata Ruedemann.
Schmidtella crassimarginata var. ventrilabiata Ruedemann, Bull. New York State Mus., 49, 1901, p. 75, pl. 7, figs. 12–18.
Mohawkian (Rysedorph): Rysedorph Hill, Rensselaer County, New York.

Schmidtella incompta Ulrich.
Schmidtella incompta Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 642, pl. 45, figs. 27, 32-33.
Black River (Decorah): Fountain, Minnesota.
Cotypes.—Cat. No. 41298, U.S.N.M.

Schmidtella incompta subæqualis Ulrich.
Schmidtella incompta subæqualis Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 642, pl. 43, figs. 39-41.
Trenton (Prosser): Near Cannon Falls, Minnesota.
Holotype.—Cat. No. 41297, U.S.N.M.

Schmidtella sublenticularis (Jones).
Polycope sublenticularis Jones, Quart. Jour. Geol. Soc. London, 46, 1890, p. 550, pl. 21, figs. 6a, b.
Richmond (English Head and Charleton): English Head, Anticosti.

Schmidtella subrotunda Ulrich.
Schmidtella subrotunda Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 643, pl. 4 figs. 39-42.
Black River (Decorah): Minneapolis, Minnesota.
Cotypes.—Cat. No. 41300, U.S.N.M.

Schmidtella umbonata Ulrich.
Schmidtella umbonata Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 641, pl. 45, figs. 36-38.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 343, figs. 1656a-
Black River (Decorah): St. Paul and Cannon Falls, Minnesota.
Cotypes.—Cat. No. 41301, U.S.N.M.

SCHMIDTIA Zittel. See Dicellomus Hall.

SCHRŒDEROCERAS Hyatt. Genotype: Lituites angulatum Saeman.
Schrœderoceras Hyatt, Proc. Amer. Phil. Soc., 32, 1894, p. 458.—Miller, N. A. Geol. Pal., 2d App., 1897, p. 777.—Ruedemann, Bull. New York State Mus., 90, 1906, p. 475.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 70.

Schrœderoceras cassinense (Whitfield).
Lituites eatoni var. cassinensis Whitfield, Bull. Amer. Mus. Nat. Hist., 1, 1886, p. 332, pl. 32, fig. 2.—Seely, Vermont State Geol. Rep., 7, 1910, pl. 54, fig. 2.
Schrœderoceras cassinense Hyatt, Amer. Phil. Soc. Proc., 32, 1894, p. 473, pl. 6, figs. 36-38; pl. 7, figs. 4-6.—Ruedemann, Bull. New York State Mus., 90, 1906, p. 476, pl. 20, figs. 1, 2, figs. 35-36.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 71.
Canadian (Beekmantown): Fort Cassin, Vermont; Valcour, New York.
Plesiotypes.—Cat. No. 25661, U.S.N.M. (Hyatt).

Schrœderoceras eatoni (Whitfield).
Lituites eatoni Whitfield, Bull. Amer. Mus. Nat. Hist., 1, 1886, p. 331, pl. 28, figs. 5-7; pl. 32, fig. 1.—Seely, Vermont State Geol. Rep., 7, 1910, pl. 54.
Discoceras eatoni Schröder, Pal. Abhandl. von Dames and Kayser, neue folge, 1, 5, Heft 4, Jena, 1891, p. 22.
Schrœderoceras eatoni Hyatt, Amer. Phil. Soc. Proc., 32, 1894, p. 470, pl. 6, figs. 28-35; pl. 7, figs. 7-8.—Ruedemann, Bull. New York State Mus., 90, 1906, pp. 453, 476, pl. 20, figs. 3-4; pl. 23, fig. 1.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 70, figs. 1280, 1281.
Canadian (Beekmantown): Fort Cassin, Vermont; Valcour, New York.
Plesiotypes.—Cat. No. 25660, U.S.N.M. (Hyatt).

Schrœderoceras palinurus (Billings).
Lituites Palinurus Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 25 (adv. sheets, 1862).
Schrœderoceras palinurus Miller, N. A. Geol. Pal., 2d App., 1897, p. 778 (gen. ref.).
Canadian (Romaine): Mingan Islands, Quebec.

SCHUCHERTELLA Girty. Genotype: Streptorhynchus lens White.
Schuchertella Girty, Proc. U. S. Nat. Mus., 27, 1904, p. 734.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 228.—Schuchert, Zittel-Eastman Textb. Pal., 1913, p. 386.
Orthothetes Hall and Clarke, and other American authors.
Streptorhynchus (part) Hall, Nettelroth, and other authors.

Schuchertella alterniradiata (Shaler).
Strophomena alterniradiata Shaler, Bull. Mus. Comp. Zool., 4, 1865, p. 63.
Anticostian (Gun River): Southwest Point, Anticosti.

Schuchertella amherstburgensis Grabau.
Schuchertella amherstburgensis Grabau, Michigan Geo.. Surv., Geol. Ser., 1, 1909, p. 124, pl. 17, figs. 1–3.
Upper Monroan (Amherstburg): Detroit River bed, Amherstburg, Ontario.

Schuchertella conferta Foerste.
Schuchertella confertus Foerste, Cincinnati Soc. Nat. Hist. Jour., 21, 1909, p. 23 pl. 2, fig. 13A, B.
Clinton (West Union): Near Martins, Lewis County, Kentucky.

Schuchertella curvistriata Savage.
Schuchertella curvistriata Savage, Bull. Geol. Surv. Illinois, 23, 1913, p. 112, pl. 7, fig. 6.
Upper Medinan (Channahon): Will County, Illinois.

Schuchertella deckerensis (Weller).
Orthothetes deckerensis Weller, Geol. Surv. New Jersey, Pal., 3, 1903, pp. 229, 230, pl. 20, figs. 6, 7.
Schuchertella deckerensis Maynard, Maryland Geol. Surv., Low. Dev., 1913, p. 329, pl. 60, figs. 13–16.
Helderbergian: Two miles south of Tristates, New York (Decker Ferry); Keyser, West Virginia; Cumberland, Cash Valley, etc., Maryland (Keyser).

Schuchertella deformis (Hall).
Orthis deformis Hall, 10th Rep. New York State Cab. Nat. Hist., 1857, p. 44; Pal. New York, 3, 1859, p. 174, pl. 10a, fig. 13; pl. 15, fig. 3.
Orthothetes deformis Schuchert, Bull. U. S. Geol. Surv., No. 87, 1897, pp. 296–297.
Schuchertella deformis Maynard, Maryland Geol. Surv., Low. Dev., 1913, p. 331, pl. 61, figs. 1, 2.
Helderbergian: Albany County, New York (New Scotland); Devils Backbone and Cash Valley, Maryland (Keyser).

Schuchertella hydraulica (Whitfield).
Streptorhynchus hydraulicum Whitfield, Annals New York Acad. Sci., 2, 1882, p. 193; ibid., 5, 1891, p. 508, pl. 5, figs. 1–3; Geol. Ohio, 7, 1895, p. 410, pl. 1, figs. 1–3.—Sherzer, Geol. Surv. Michigan, 7, pt. 1, 1900, pl. 17, figs. 1–3.
Orthothetes hydraulicus Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 297.
Schuchertella hydraulica Grabau, Michigan Geol. Surv., Geol. Ser., 1, 1909, p. 120, pl. 17, fig. 7; pl. 30, figs. 1–3.
Monroan: Ballville and Greenfield, Ohio (Greenfield); Salt shaft, Detroit, Michigan (Raisin River).

Schuchertella interstriata (Hall).

Orthis interstriata Hall, Pal. New York, 2, 1852, p. 326, pl. 74, figs. 1, 2.

Orthothetes interstriatus Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 297.—Weller, Geol. Surv. New Jersey, Pal., 3, 1903, p. 229, pl. 20, figs. 8, 9.—Schuchert, Amer. Geol., 31, 1903, p. 165.—Grabau, Bull. New York State Mus., 92, 1906, p. 109, fig. 8.

Schuchertella interstriata Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 228, fig. 277.—Grabau, Michigan Geol. Surv., Geol. Ser., 1, 1909, p. 121, pl. 17, figs. 4, 5; pl. 32, figs. 1a–c.

Orthothetes hydraulicus Grabau (not Whitfield), Bull. Geol. Soc. Amer., 2, 1900, p. 365, pl. 22, figs. 1a–c; Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 184, fig. 92; Bull. New York State Mus., 45, 1901, p. 184, fig. 92.

Cayugan: Schoharie Valley, etc. (Rondout and Cobleskill), Buffalo, etc. (Akron), New York.

Helderbergian (Decker Ferry): Two miles south of Tristates, New York, etc.

Upper Monroan (Lucas): Northern Ohio and Ontario.

Schuchertella interstriata sinuata Holtedahl.

Schuchertella interstriata sinuata Holtedahl, 2d Arct. Exp. "Fram," 1898-1902, No. 32, 1914, p. 20, pl. 7, fig. 6.

Helderbergian (Lower beds): Reindeer Valley, Southwestern Ellesmereland, Arctic America.

Schuchertella marylandica Maynard.

Schuchertella marylandica Maynard, Maryland Geol. Surv., Low. Dev., 1913, p. 333, pl. 61, figs. 5–9.

Helderbergian (Keyser): Cumberland, Maryland; Keyser, West Virginia.

Schuchertella missouriensis (Shumard).

Orthis missouriensis Shumard, Geol. Rep. Missouri, 1855, p. 205, pl. C, fig. 9.—Keyes, Geol. Surv. Missouri, 5, 1895, p. 60.

Schuchertella missouriensis Savage, Bull. Geol. Surv. Illinois, 23, 1913, p. 43, pl. 1; figs. 12 and 13, p. 74.

Upper Medinan: Cape Girardeau, Missouri; Alexander County, Illinois (Girardeau); near Louisiana, Missouri (Edgewood).

Schuchertella missouriensis convexa Savage.

Schuchertella missouriensis var. convexa Savage, Bull. Geol. Surv. Illinois, 23, 1913, p. 74, pl. 4, fig. 2.

Upper Medinan (Edgewood—Noix): Louisiana, and near Buffalo Creek, Pike County, Missouri; near Hamburg, Illinois.

Schuchertella pecten (Roemer).

Strophomena pecten Roemer, Die Sil. Fauna West. Tennessee, 1860, p. 67, pl. 5, fig. 4.—Billings, Geol. Canada, 1863, p. 311, fig. 315; Cat. Sil. Fossils of Anticosti, 1866, p. 40.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 1130, figs.

Schuchertella pecten Schuchert and Twenhofel, Bull. Geol. Soc. Amer., 21, 1910, p. 702.

Niagaran (Brownsport): Decatur County, Tennessee.

Richmond—Anticostian: Island of Anticosti.

Schuchertella prolifica Schuchert and Maynard.

Schuchertella prolifica Schuchert and Maynard, Maryland Geol. Surv., Low. Dev., 1913, p. 327, pl. 60, figs. 1–3.

Helderbergian (Keyser): Keyser, West Virginia; Dawson, Devils Backbone, Corriganville, and Tonoloway, Maryland.

Schuchertella propinqua (Meek and Worthen).

Hemipronites subplanus? Meek and Worthen, Illinois, Geol. Surv., 3, 1868, p. 349.

Hemipronites propinquus Meek and Worthen, Illinois Geol. Surv., 3, 1868, p. 351.

Schuchertella propinqua Savage, Bull. Geol. Surv. Illinois, 23, 1913, p. 73, pl. 4, fig. 1.

Upper Medinan (Edgewood): Alexander County, Illinois; Pike County, Missouri.

Schuchertella roemeri (Foerste).

Orthothetes roemeri Foerste, Jour. Geol., 11, 1903, p. 711.

Schuchertella roemeri Foerste, Bull. Sci. Lab. Denison Univ., 14, 1909, p. 82, pl. 2, fig. 27A–C.

Niagaran (Brownsport): Near Dixon Spring and Pegram, Tennessee.

Schuchertella sinuata (Hall and Clarke).

Orthothetes deformis var. sinuatus Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pl. 20, figs. 8 and 9.

Schuchertella sinuata Maynard, Maryland Geol. Surv., Low. Dev., 1913, p. 331, pl. 61, figs. 3, 4.

Helderbergian (Keyser): Devil's Backbone, near Cumberland, Maryland.

Schuchertella subplana (Conrad).

Strophomena subplana Conrad, Jour. Acad. Nat. Sci., Philadelphia, 8, 1842, p. 258.—Hall, Geol. New York, Rep. 4th Dist., 1843, p. 104, fig. 1; 12th Rep. New York State Cab. Nat. Hist., 1859, p. 82.—Owen, Amer. Jour. Sci. Arts, 48, 1845, p. 312, fig.

Leptæna subplana Hall, Pal. New York, 2, 1852, p. 259, pl. 53, figs. 8–10.—Billings, Canadian Nat. Geol., 1, 1856, p. 138, pl. 2, figs. 16, 17.

Streptorhynchus (Strophodonta) subplanus Hall, Geol. Survey Wisconsin, 1, 1862, p. 436.

Streptorhynchus subplanus Hall, Trans. Albany Institute, 4, 1863, p. 226; 16th Rep. New York State Cab. Nat. Hist., 1863, p. 63, figs. 1, 2; 28th Rep. New York State Mus. Nat. Hist., 1879, p. 151, pl. 21, figs. 26–33; 11th Rep. State Geol. Indiana, 1882, p. 288, pl. 21, figs. 26–33; 2d Ann. Rep. New York State Geol., 1883, pl. 39, figs. 21–24; pl. 42, fig. 19.—Nettelroth, Kentucky Fossil Shells, Mem. Kentucky Geol. Surv., 1889, p. 141, pl. 29, figs. 11, 12.—Beecher and Clarke, Mem. New York State Mus., 1, 1889, p. 23, pl. 2, figs. 14–20.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1097, figs.

Streptorhynchus hemiaster Winchell and Marcy, Mem. Boston Soc. Nat. Hist., 1, 1865, p. 93, pl. 2, fig. 10.—Hall, 20th Rep. New York State Cab. Nat. Hist., 1867, p. 392.

Orthothetes subplana Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 255, pl. 9, figs. 21–24; pl. 9A, fig. 19; pl. 11A, figs. 9–12.

Orthothetes subplanus Grabau, Bull. New York State Mus., 45, 1901, p. 184, fig. 91; Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 184, fig. 91.—Kindle and Breger, 28th Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1904, p. 432, pl. 1, fig. 5.

Schuchertella subplana Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 228, fig. 276.

Niagaran: Lockport, etc., New York (Rochester); Ontario; Indiana; Kentucky; Tennessee; Illinois; Missouri; Nova Scotia; Anticosti, etc.

Plesiotype.—Cat. No. 51313 (Nettelroth).

Schuchertella tenuis (Hall).

Streptorhynchus tenuis Hall, Trans. Albany Inst., 4, 1863, p. 210; 28th Rep. New York State Mus. Nat. Hist., 1879, p. 150, pl. 23, figs. 11–13; 11th Rep. State Geol. Indiana, 1882, p. 287, pl. 23, figs. 11–13.—Foerste, Bull. Sci. Lab.

Schuchertella tenuis—Continued.
Denison Univ., 2, 1887, p. 105, pl. 8, figs. 31, 32, 38.—Nettelroth, Kentucky Fossil Shells, Mem. Kentucky Geol. Surv., 1889, p. 142.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1098, figs.
Orthothetes tenuis Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 255.
Strophomena (Orthothetes) tenuis Foerste, Geol. Ohio, 7, 1895, p. 568, pl. 27, figs. 31, 32, 38.
Niagaran: Waldron, Indiana (Waldron); Near Louisville, Kentucky (Louisville).
Upper Medinan (Brassfield): Dayton, Ohio; Hanover, Indiana.
Plesiotype.—Cat. No. 51329, U.S.N.M. (Nettelroth).

SCHUCHERTIA Gregory. Genotype: Palasterina stellata Billings.
Schuchertia Gregory, Geol. Mag., dec. 4, 6, 1899, p. 351.—Schuchert, Bull. U. S. Nat. Mus., 88, 1915, p. 195.
Trentonaster Sturtz, Verh. naturh. Ver. preuss. Rheinl., etc., 56, 1899, p. 224. (Genotype: Palasterina stellata Billings.)
Palasterina Billings (part) (not McCoy) Geol. Surv. Canada, dec. 3, 1858, p. 76.

Schuchertia laxata Schuchert.
Schuchertia laxata Schuchert, in Frech, Cat. Foss., 1, Anim., pt. 3, 1914, p. 38 (nom. nud.); Bull. U. S. Nat. Mus., 88, 1915, p. 198, pl. 32, fig. 3; pl. 33, figs. 2, 3.
Richmond (Waynesville): Near Waynesville, Hamilton, and Oxford, Ohio.

Schuchertia ordinaria Schuchert.
Schuchertia ordinaria Schuchert, in Frech, Foss. Cat., 1, Anim., pt. 3, 1914, p. 38 (nom nud.); Bull. U. S. Nat. Mus., 88, 1915, p. 199.
Upper Medinan (Girardeau): Alexander County, Illinois.

Schuchertia stellata (Billings).
Palasterina stellata Billings, Geol. Surv. Canada, Rep. Progr. for 1853-56, 1857, p. 290; Geol. Surv. Canada, dec. 3, 1858, p. 76, pl. 9, figs. 1a, 1b.—Wright, Mon. Brit. Foss. Echinod., Oolitic, 2, pt. 1, Pal. Soc., 1862, p. 27, fig. 1b on p. 26.—Chapman, Canadian Jour., n. s., 6, 1861, p. 517.—Quenstedt, Petrefactenkunde Deutschlands, 1, 4, 1876, p. 74, pl. 92, fig. 34.
Trentonaster stellata Stürtz, Verh. naturh. Verh. preuss. Rheinl., etc., 1899, p. 225.
Schuchertia stellata Gregory, Geol. Mag., dec. 4, 6, 1899, p. 351.—Schuchert, Bull. U. S. Nat. Mus., 88, 1915, p. 196, pl. 32, fig. 2; pl. 33, fig. 1.
Trenton: Ottawa, Ontario.

SCOFIELDIA Ulrich and Bassler. Genotype: Drepanella bilateralis Ulrich.
Scofieldia Ulrich and Bassler, Proc. U. S. Nat. Mus., 35, 1908, p. 314.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 356.

Scofieldia bilateralis (Ulrich).
Drepanella bilateralis Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 671, pl. 46, figs. 35-38.
Scofieldia bilateralis Ulrich and Bassler, Proc. U. S. Nat. Mus., 35, 1908, p. 314, pl. 41, figs. 16-18.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 356, fig. 1664d-f.
Black River (Decorah): St. Paul and near Cannon Falls, Minnesota
Cotypes.—Cat. No. 41558, U.S.N.M.

SCOLECOLITHUS Roemer. See Scolithus Haldeman.

SCOLITHUS Haldemann. Genotype: Fucoides? linearis Haldemann.

Scolithus Haldemann, Supp. Mon. Limniades, 1840, p. 3.—Hall, Pal. New York, 1, 1847, p. 2.—Hitchcock, Geol. Vermont, 1, 1861, p. 356.—Nathorst, Kongl. Sven. Vet.-Acad. Handl., 18, 1881, p. 49.—Barrois, Rech. Terr. Anciens Asturies Galice (Mem. Soc. Geol. Nord, 2), 1882, p. 177.—Whiteaves, Trans. Royal Soc. Canada, 1, sec. 4, 1883, p. 109.—Ami, Canadian Rec. Sci., 2, 1886, p. 304.—Lebesconte, Bull. Soc. Geol. France, 3d ser., 14, 1886, p. 793.—Miller, N. A. Geol. Pal., 1889, p. 520.—Wanner, Amer. Geol., 5, 1890, p. 35.—Dawson, Quart. Jour. Geol. Soc. London, 46, 1890, p. 603, figs. 7, 8.—J. F. James, Bull. Geol. Soc. Amer., 3, 1892, p. 32.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 246.

Scolecolithus Roemer, Neues Jahrb. f. Min., etc., 1848, p. 171.

Scolithus canadensis Billings.

Scolithus Canadensis Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 96 (adv. sheets, 1862); Geol. Surv. Canada, p. 101, fig. 7.—Miller, N. A. Geol. Pal., p. 521, fig. 943.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 943, fig.—J. F. James, Bull. Geol. Soc. Amer., 3, 1892, p. 37, fig. 8.

Upper Cambrian or Ozarkian (Potsdam): Township of Landsdowne, Bastard, etc., Canada; Snake Mountain, Vermont.

SCOLITHUS CLINTONENSIS James. See Scolithus verticalis.

Scolithus delicatulus James.

Scolithus delicatulus James, The Paleontologist, No. 5, 1881, p. 33.—J. F. James, Bull. Geol. Soc. Amer., 3, 1892, pp. 40, 41, fig. 15.

Richmond: Dearborn County, Indiana.

Scolithus dispar James.

Scolithus linearis James, Paleontologist, No. 5, 1881, p. 33 (S. dispar proposed in case distinct).

Eophyton (Scolithus) dispar, J. F. James, Bull. Geol. Soc. Amer., 3, 1892, p. 41, fig. 14.

Eden (Economy): Cincinnati, Ohio, and vicinity.

Scolithus linearis (Haldemann).

Fucoides? linearis Haldemann, Supp. Monograph Limniades, 1840, p. 3.

Scolithus linearis Hall, Pal. New York, 1, 1847, p. 2, pl. 1, figs. 1a–1c.—Billings, Canadian Nat. Geol., 1, 1856, p. 32.—Rogers, Geol. Pennsylvania, 2, pt. 2, 1858, p. 616, fig. 589.—Mackie, The Geologist, 2, 1859, p. 388, fig. 5.—Chapman, Canadian Jour., 6, 1861, p. 503, fig. 65.—Hitchcock, Geol. Vermont, 1, 1861, p. 356, fig. 254.—Billings, Geol. Vermont, 2, 1861, p. 943; Rep. Econ. Geol., etc., Vermont, 1862, p. 215.—Winchell, Amer. Jour. Sci. Arts, 2d ser., 37, 1864, p. 227.—Billings, Pal. Fossils, 1, Geol. Surv. Canada, 1865, p. 2 (adv. sheets, 1861).—Torell, Lunds Univers. Arsskrift, 6, No. 8, 1869, p. 12 (loc. occ.).— Roemer, Leth. geog. 1, Leth. Pal., Atlas, 1876, pl. 2, fig. 11.—Nathorst, Kongl. Sven. Vet.-Akad. Handl., 18, No. 7, 1881, pp. 50, 100.—Barrois, Rech. Terr. Anciens Asturies Galice (Mem. Soc. Geol. Nord, 2), 1882, p. 177, pl. 4, fig. 4; pl. 5, figs. 1-3.—Walcott, 10th Ann. Rep. U. S. Geol. Surv., 1890, p. 31. 603, pl. 63, figs. 1, 1a–c.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 944, fig.—J. F. James, Bull. Geol. Soc. Amer., 3, 1892, p. 34, figs. 3, 4; p. 36, fig. 6; p. 35.

Scolithus cf. linearis Grabau, Occ. Papers Boston Soc. Nat. Hist., 4, 1900, p. 614.

Scolecolithus linearis Goeppert, Zeits. d. d. geol. Gesell., 3, 1851, p. 189.

Arenicolithes (Scolithus) linearis Salter, Quart. Jour. Geol. Soc. London, 13, 1857, p. 205.

Scolithus linearis—Continued.

Arenicolites (linearis?) Salter, Mem. Geol. Surv. Great Britain, 3, 1866, p. 292, pl. 11b, fig. 27; ibid., 2d ed., 1881, p. 484, pl. 11b, fig. 27.

Cambrian and ?Lower Ordovician: Pennsylvania, New York, Virginia, Wisconsin, Canada, etc.

Scolithus linearis James. See Scolithus dispar.

Scolithus minnesotensis James.

Arenicolites sp. Winchell, Geol. Minnesota, 1, 1884, pp. 656, 657.

Scolithus minnesotense J. F. James, Bull. Geol. Soc. Amer., 3, 1892, p. 41; Jour. Cincinnati Soc. Nat. Hist., 17, 1895, p. 134.

St. Peter: Rice County, Minnesota.

Scolithus minutus Brainerd and Seely.

Scolithus minutus (Wing) Brainerd and Seely, Bull. Geol. Soc. Amer., 1, 1890, p. 504.—J. F. James, Bull. Geol. Soc. Amer., 3, 1892, p. 38, figs. 9, 10.

Canadian (Beekmantown): Vermont.

Scolithus tuberosus Miller and Dyer.

Scolithus tuberosus Miller and Dyer, Cont. to Pal., No. 2, 1878, p. 5, pl. 4, fig. 4.—J. F. James, Bull. Geol. Soc. Amer., 3, 1892, p. 39, fig. 11.

Maysville (Mount Hope): Cincinnati, Ohio, and vicinity.

Scolithus verticalis Hall.

Fucoides verticalis Hall, Geol. New York, Rep. 4th Dist., 1843, p. 242.

Scolithus verticalis Hall, Pal. New York, 2, 1852, p. 6, pl. 2, fig. 3.—Nicholson and Hinde, Canadian Jour., n. s., 14, 1874, p. 138.—Nicholson, Rep. Pal. Prov. Ontario, pt. 2, 1875, p. 40, fig. 16.—J. F. James, Bull. Geol. Soc. Amer., 3, 1892, p. 34.—Bassler, Bull. Virginia Geol. Surv., 2a, 1909, pl. 8, fig. 3.

Scolithus clintonensis James, Bull. Geol. Soc. Amer., 3, 1892, p. 33, footnote, p. 35, fig. 5.

Upper Medinan: Monroe County, New York, etc.

Scolithus woodi Whitfield. See Arenicolites woodi.

Scyphia digitata Owen. See Brachiospongia digitata.

Scyphia stellata Troost. Not recognized.

Scyphia stellata Troost, 5th Geol. Rep. Tennessee, 1840, p. 74.

Silurian: Perry County, Tennessee.

Scyphocrinus Hall. See Cupulocrinus D'Orbigny.

Scyphocrinus heterocostalis Hall. See Cupulocrinus heterocostalis.

Scyphocrinus nodosus D'Orbigny. See Schizocrinus nodosus.

Scyphocrinus striatus D'Orbigny. See Schizocrinus striatus.

SEDGWICKIA McCoy. Genotype: S. attenuata McCoy.

Sedgwickia McCoy, Syn. Char. Carb. Foss. Ireland, 1844, p. 61.—Woodward, Man. Mollusca, pt. 2, 1854, p. 322.—Meek and Hayden, Pal. Up. Missouri, Smiths. Contr. Knowl., 172, 14, 1865, p. 38.—Zittel, Handb. Pal., 2, 1881, p. 129.—Miller, N. A. Geol. Pal., 1889, p. 511.—Hind, Mon. British Carb. Lamellibranchiata, 1, Pal. Soc., 1899, p. 277.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 984.

Sedgwickia Whitfield. See Rhytimya Ulrich.

Sedgwickia? compressa Meek.
Sedgwickia? compressa Meek, Proc. Acad. Nat. Sci. Philadelphia, 1872, p. 324; Geol. Surv. Ohio Pal., 1, 1873, p. 144, pl. 12, figs. 7a, b.—Miller, Cincinnati Quart. Jour. Sci., 1, 1874, p. 219.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 946, figs.
Maysville (Fairmount): Cincinnati, Ohio.

Sedgwickia? divaricata Hall and Whitfield. Not recognized.
Sedgwickia? divaricata Hall and Whitfield, Geol. Surv. Ohio Pal., 2, 1875, p. 89, pl. 2, fig. 3.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 946, fig.—Foerste, Bull. Sci. Lab. Denison Univ., 17, 1914, p. 280.
Richmond: Blanchester, Ohio.
Observation.—Based on a greatly compressed shell, probably a young specimen of Whiteavesia pholodiformis.

Sedgwickia? fragilis Meek.
Sedgwickia? fragilis Meek, Proc. Acad. Nat. Sci. Philadelphia, 1872, p. 323; Geol. Surv. Ohio Pal., 1, 1873, p. 143, pl. 12, figs. 3a, b.—Miller, Cincinnati Quart. Jour. Sci., 1, 1874, p. 219.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 946, fig.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 1020, pl. 48, figs. 4, 4a.
Maysville: Cincinnati, Ohio.
Observation.—Founded on greatly compressed specimen.

SEDGWICKIA(?) LUNULATA Whitfield. See Rhytimya lunulata.

SEDGWICKIA (GRAMMYSIA?) NEGLECTA Meek. See Cuneamya neglecta.

SEELYA Ulrich. Genotype: S. ventricosa Ulrich.
Pleurotomaria (part) of authors.
Seelya Ulrich, Geol. Minnesota, 3, pt. 2, 1897, pp. 958, 1011.

Seelya cassandra (Billings).
Murchisonia Cassandra Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 189, fig. 171.
Seelya cassandra Ulrich, Geol. Minnesota, 3, pt. 2, 1897, p. 1011 (gen. ref.).
Ozarkian? (Levis-erratics): Point Levis, Quebec.

Seelya difficilis (Whitfield).
Pleurotomaria difficilis Whitfield, Bull. Amer. Mus. Nat. Hist., 3, 1890, p. 33, pl. 1, figs. 17, 18.—Seely, Vermont State Geol. Rep., 7, 1910, pl. 57, fig. 8.
Canadian (Beekmantown): Fort Cassin, Vermont.
Plesiotypes.—Cat. No. 28136, U.S.N.M. (Ulrich).

Seelya mundula Ulrich.
Seelya mundula Ulrich, Geol. Minnesota, 3, pt. 2, 1897, p. 1012, pl. 70, figs. 11–12.
Maysville (Fairmount): Cincinnati, Ohio, and vicinity.
Cotypes.—Cat. No. 45995, U.S.N.M.

Seelya(?) (Plethospira?) ulrichi Schuchert.
Seelya(?) (Plethospira?) ulrichi Schuchert, Proc. U. S. Nat. Mus., 22, 1900, p. 166, pl. 12, figs. 9, 10.
Mohawkian: Head of Frobisher Bay, Baffin Land.
Cotypes.—Cat. No. 28187, U.S.N.M.

Seelya ventricosa Ulrich.
Seelya ventricosa Ulrich, Geol. Minnesota, 3, pt. 2, 1897, p. 1009, figs. 7b–d.
Pleurotomaria ventricosa Miller, N. A. Geol. Pal., 2d App., 1897, p. 769.
Canadian (Beekmantown): Fort Cassin, Vermont.
Holotype.—Cat. No. 45996, U.S.N.M.

Selenoides Owen. See Ischadites Murchison.

SEMICOSCINIUM Prout. Genotype: S. rhomboideum Prout.

Semicoscinium Prout, Trans. St. Louis Acad. Sci., 1, 1859, p. 443.—Ulrich, Contr. Amer. Pal., 1, 1886, p. 4.—Miller, N. A. Geol. Pal., 1889, p. 322.—Ulrich, Geol. Surv. Illinois, 8, 1890, pp. 395, 555.—Simpson, 13th Ann. Rep. New York State Geol., for 1893, 1895, p. 705; 47th Ann. Rep. New York State Mus., p. 899.—Ulrich, Zittel's Textb. Pal. (Engl. ed), 1896, p. 281.—Simpson, 14th Ann. Rep. State Geol. New York for 1894, 1897, p. 509.—Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, pp. 38, 400.—Grabau, Bull. New York State Mus., 45, 1901, p. 171; Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 171.—Bassler, Bull. U. S. Geol. Surv. 292, 1906, p. 51.—Hennig, Archiv. fur Zool., k. Sven. Vat.-Akad. Stockholm, 3, No. 10, 1906, p. 7.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 143.—Bassler, Zittel-Eastman Textb. Pal., 1913, p. 341.

Cryptopora Nicholson, Canadian Jour., n. s., 14, 1874, p. 131; Ann. Mag. Nat. Hist., 4th ser., 13, 1874, p. 77; Pal. Province Ontario, 1874, p. 102.—Vine, Rep. 51st Meeting British Assoc. Adv. Sci., 1882, p. 169.—Hall, Rep. State Geol. New York for 1884, 1885, p. 40.—Ulrich, Contr. Amer. Pal., 1, 1886, p. 6.

Carinopora Nicholson, Canadian Jour., n. s., 14, 1874, p. 132; Ann. Mag. Nat. Hist., 4th ser., 13, 1874, p. 81; Pal. Province Ontario, 1874, p. 109.—Zittel, Handb. Pal., 1, 1880, p. 602.—Vine, Rep. 51st Meeting British Assoc. Adv. Sci., 1882, p. 169.—Hall, Rep. State Geol. New York for 1884, 1885, p. 38.—Ulrich, Contr. Amer. Pal., 1, 1886, p. 4.

Cycloporina Simpson, 13th Ann. Rep. State Geol. New York for 1893, 1895, pp. 711, 725; 47th Ann. Rep. New York State Mus., 1895, pp. 905, 919; 14th Ann. Rep. State Geol. New York for 1894, 1897, pp. 504, 520.

Semicoscinium acmeum (Hall).

Fenestella acmea Hall, 28th Ann. Rep. New York State Mus., doc. ed., 1876, pl. 12, figs. 10–13, 14 (sp.?); ibid., mus. ed., 1879, p. 124, pl. 12, figs. 10–14; 11th Ann. Rep. Indiana Geol. Nat. Hist., 1882, p. 250, pl. 11, figs. 10–14.—Cumings, Amer. Jour. Sci., 20, 1905, pl. 7, fig. 52.

Semicoscinium acmea Ulrich, Geol. Surv. Illinois, 8, 1890, p. 355.

Niagaran (Waldron): Waldron, Indiana.

Semicoscinium planum Ulrich and Bassler.

Semicoscinium planum Ulrich and Bassler, Maryland Geol. Surv., Low. Dev., 1913, p. 285, pl. 45, fig. 7; pl. 49, fig. 4.

Helderbergian (Keyser): Hyndman, Pennsylvania.

Holotype.—Cat. No. 60743, U.S.N.M.

Semicoscinium tenuiceps (Hall).

Fenestella prisca(?) (not of Lonsdale nor of Goldfuss) Hall, Pal. New York, 2, 1852, p. 50, pl. 19, figs. 4a–m.

Fenestella tenuiceps Hall, Pal. New York, 2, 1852, p. 165, pl. 40D, figs. 2a-b.

Semicoscinium tenuiceps Ulrich, Geol. Surv. Illinois, 8, 1890, p. 355.—Grabau, Bull. New York State Mus., 45, 1901, p. 171, figs. 71, 72; Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 171, figs. 71, 72.—Bassler, Bull. U. S. Geol. Surv., 292, 1906, p. 52, pl. 19, figs. 6, 7.—Grabau and Shimer, N. A. Index Fossils, 1 1907, p. 143, fig. 200.

Clinton: Lockport, Rochester, Lewiston, and Niagara Falls, New York; Grimsby, Ontario (Rochester); Osgood, Indiana (Osgood).

SEPTAMEROCERAS Hyatt. Genotype: Gomphoceras inflatum Billings.

Septameroceras Hyatt, Proc. Boston Soc. Nat. Hist., 22, 1883, p. 278.—Foord, Cat. Foss. Ceph. British Mus., 1, 1888, p. 246.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 131.

Observation.—As pointed out by Whiteaves (Pal. Fossils, Geol. Surv. Canada, 3, pt. 2, 1895, p. 102), Gomphoceras inflatum, the genotype of Septameroceras, is a manuscript name of Billings applied to a rough cast of the body chamber of a shell from the Silurian at L'Anse a la Barbe, near Port Daniel, Canada, with the aperture badly preserved. He remarks further that this shell is probably the same as Gomphoceras subgracilis or G. septore. As the latter is the best known species of this type of structure, it would be well to recognize it as the genotype of Septameroceras.

Septameroceras septore (Hall).

Gomphoceras septoris Hall, 20th Rep. New York State Cab. Nat. Hist. (extras, 1865), 1868, p. 350, figs. 9, 10; rev. ed. for 1868 (1870), p. 410, figs. 6, 7.—Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 2, 1895, p. 102.

Cyrtoceras septoris Hall and Whitfield, Geol. Surv. Ohio, Pal., 2, 1875, p. 151 (gen. ref.).—Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 1, 1884, p. 39 (loc. occ.).

Septameroceras septoris Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 131, fig. 1379.

Niagaran: Wauwatosa, Wisconsin (Racine?); Elora, Ontario (Guelph).

SERPULITES Macleay. Genotype: S. longissimus Murchison.

Serpulites Macleay in Murchison Sil. Syst., 1839, p. 700; Ann. Mag. Nat. Hist., 4, 1840, p. 387.—McCoy, British Pal. Rocks Foss., 1854, p. 132.—Pictet, Traité de Pal., 2d ed., 2, 1854, p. 569.—Salter, Cat. Camb. Sil. Foss., 1873, p. 176.—Etheridge, Geol. Mag., dec. 2, 7, 1880, p. 304.—Zittel, Handb. Pal., 1, 1880, p. 565.—Waagen, Mem. Geol. Surv. Indica, Pal. Indica, 13th ser., 1, 1885, p. 816.—Miller, N. A. Geol. Pal., 1889, p. 521.—Hinde, Zittel-Eastman Textb. Pal., 1, 1900, p. 253; 2d ed., 1913, p. 139.

Serpulites dissolutus Billings.

Serpulites dissolutus Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 56 (adv. sheets, 1862).—Whiteaves, ibid., 3, pt. 3, 1897, pp. 160, 240.

Black River—Richmond: Montreal, Ottawa, etc., Canada. Various localities in the United States.

Serpulites longissimus Murchison.

Serpulites longissimus Murchison, Sil. Syst., 1839, p. 608, pl. 5, fig. 1.—Salter in Murchison's Siluria, 1867, 4th ed., pl. 16, fig. 1.—Nicholson and Etheridge, Mon. Sil. Foss. Girvan Dist., 1, 1880, p. 303, pl. 20, figs. 12, 13.—Ami, Proc. and Trans. Nova Scotian Inst. Sci., 8, 1895, p. 411.

Silurian: Great Britain, Antigonish County, Nova Scotia (Moydart).

Serpulites splendens Billings.

Serpulites splendens Billings, Canadian Nat. Geol., 4, 1859, p. 470.

Chazyan (Aylmer): Island of Montreal and Caughnawaga, Canada.

SHUMARDIA Billings. Genotype: S. granulosa Billings.

Shumardia Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 92 (adv. sheets, 1862).—Miller, N. A. Geol. Pal., 1889, p. 566.—Zittel, Handb. Pal., 2, 1885, p. 593.—Vogdes, Bull. U. S. Geol. Surv., 63, 1890, p. 145; Cal. Acad. Sci., Occ. Pap., 4, 1893, pp. 355, 356.—Beecher, Amer. Jour. Sci., 4th ser., 3, 1897, p. 182.—Reed, Geol. Mag., dec. 4, 5, 1898, p. 503; Low Pal. Tril. Girvan Dist., 1903, p. 43.—Raymond, Zittel-Eastman Textb. Pal., 1913, p. 711.

Shumardia glacialis Billings.
Shumardia glacialis Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 283, fig. 270.
Canadian (Quebec—P): Portland Creek and Pistolet Bay, Newfoundland.

Shumardia granulosa Billings.
Shumardia granulosa Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 92, fig. 83a, b (adv. sheets, 1862).—Miller, N. A. Geol. Pal., 1889, p. 566, fig. 1057.
Canadian (Levis, Diplograptus dentatus zone): Point Levis, Quebec.

Shumardia pusilla (Sars).
Battus pusillus Sars, Okens Isis, 1835, p. 333, pl. 8, fig. 2.
Conophrys pusilla Brögger, Die Sil. Etagen 2–3, 1882, p. 125, pl. 12, fig. 9 (cites bibliography).—Reed, Geol. Mag., dec. 4, 5, 1898, p. 501.
Shumardia pusilla Moberg, Afh. Sveriges Geol. Unders., Ser. C, No. 109, 1890, p. 4, figs. a–c.—Frech, Leth. geog., 1 Th., Leth. Pal., 2, 1 Lief., 1897, pl. 1b, fig. 13.
Canadian: Europe; Point Levis, Quebec (Levis, Diplograptus dentatus zone) [Raymond].

SICYOCRINUS Angelin. See Botryocrinus Angelin.

Sidemina Castelnau. Genotype: S. infundibuliforme Castelnau.
Sidemina Castelnau, Essai Syst. Sil. l'Amerique Septent., 1843, p. 33.

Sidemina infundibuliforme Castelnau.
Sidemina infundibuliforme Castelnau, Essai Syst. Sil. l'Amerique Septent., 1843, p. 33, pl. 10, fig. 1.
Silurian: Little Manitoulin Island, Lake Huron.
Observation.—Not recognized. Probably fragment of an Endoceras.

SIDEROCRINITES Troost. See Siderocrinus (Troost) Wood.

SIDEROCRINUS (Troost) Wood. Genotype: S. ornatus Troost.
Siderocrinites Troost, MS., 1850.
Siderocrinus Wood., Bull. U. S. Nat. Mus., 64, 1909, p. 104.

Siderocrinus ornatus (Troost) Wood.
Siderocrinites ornatus Troost, MS., 1850.
Siderocrinus ornatus Wood, Bull. U. S. Nat. Mus., 64, 1909, p. 105, pl. 12, fig. 7.
Niagaran (Brownsport): Decatur County, Tennessee.
Holotype.—Cat. No. 39935, U.S.N.M.

SIEBERELLA Œhlert. See Gypidula subgenus Sieberella Œhlert.

SIGMACYSTIS Hudson. See Canadocystis Jaekel.

SIGMAGRAPTUS Ruedemann. Genotype: S. præcursor Ruedemann.
Sigmagraptus Ruedemann, Mem. New York State Mus., 7, pt. 1, 1904, pp. 701, 702.

Sigmagraptus præcursor Ruedemann.
Cœnograptid Ruedemann, New York State Pal., Ann. Rep., 1902, p. 566.
Sigmagraptus præcursor Ruedemann, Mem. New York State Mus., 7, pt. 1, 1904, pp. 702, 703, pl. 5, figs. 13, 14; fig. 93.
Canadian (Deepkill, Didymograptus bifidus zone): Deepkill, Rensselaer County, New York.

SINUITES Koken. Genotype: Bellerophon bilobatus Sowerby.

Bellerophon (part) of numerous authors.

Protowarthia Ulrich and Scofield, Minnesota Geol., 3, pt. 2, 1897, pp. 848–867.—Koken, Neues Jahrb. Min., Geol., Pal., 1, 1898, p. 5.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 952.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 611. (Genotype: Bellerophon cancellatus Hall.)

Sinuites Koken, Die Leitfossilien, Leipzig, 1896, p. 392, footnote; Bull. Acad. Imp. Sci. St. Petersburg, 7, 1897, p. 117.—Dall, Zittel-Eastman Textb. Pal., 2d ed., 1913, p. 521.

Sinuites cancellatus (Hall).

Bellerophon bilobatus Emmons (not Sowerby), Geol. New York., 2, 1842, p. 392, fig. 6.—Owen, Geol. Expl. Iowa, Wisconsin, Illinois, 2d ed., 1844, p. 84, pl. 17, fig. 15; Amer. Jour. Sci. Arts, 47, 1844, p. 365, fig. 6; ibid., 48, 1845, p. 300, fig. 7.—Hall, Pal. New York, 1, 1847, p. 184, pl. 40, figs. 3a–d.—Rogers, Geol. Pennsylvania, 2, pt. 2, 1858, p. 819, fig. 607.—Emmons, Man. Geol., 1860, p. 98, fig. 87.—Lincklaen, 14th Rep. New York State Cab. Nat. Hist., 1861, p. 47, pl. 2, fig. 6.—Hitchcock, Geol. Vermont, 1, 1861, p. 297, fig. 206.—Hall, Rep. Geol. Surv. Wisconsin, 1862, p. 39, fig. 7.—Billings, Geol. Canada, Geol. Surv. Canada, 1863, p. 184, fig. 180a, b.; Cat. Sil. Foss., Anticosti, Geol. Surv. Canada, 1866, pp. 20, 56 (loc. occ.).—Miller, Cincinnati Quart. Jour. Sci., 1, 1874, p. 306.—Kayser, Beitr. Geol. Pal. Argentin. Republik, Pal. Supp., 3, 1876, p. 25, pl. 5, figs. 6, 7.—Chamberlin, Geol. Wisconsin, 1, 1883, p. 158, fig.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 81, figs.—Miller, N. A. Geol. Pal., 1899, p. 396, fig. 652.—Keyes, Missouri Geol. Surv., 5, 1894, p. 147, pl. 51, fig. 2.—Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 2, 1895, p. 124 (loc. occ.).

Cyrtolites bilobatus Emmons, Amer. Geology, 1, pt. 2, 1855, p. 166, pl. 6, figs. 2, 3, 22, 24; pl. 17, fig. 10c.

Bellerophon cancellatus Hall, Pal. New York, 1, 1847, p. 307, pl. 83, figs. 10a–c.—Emmons, Amer. Geology, pt. 2, 1855, p. 166.

Protowarthia cancellata Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 872, pl. 63, figs. 1–14.—Ruedemann, Bull. New York State Mus., 49, 1901, p. 29.—Weller, Geol. Surv. New Jersey, Pal., 3, 1903, p. 175, pl. 12, figs. 3–5.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 971, pl. 39, fig. 6, 6b.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 611, fig. 817g–i.

Trenton—Richmond: New York, Canada, and throughout the middle United States, chiefly in the Trenton.

Plesiotypes.—Cat. Nos. 45963–45967, U.S.N.M. (Ulrich and Scofield).

Sinuites cancellatus acutus (Sowerby?) Hall.

Bellerophon bilobatus var. acutus (Sowerby?) Hall, Pal. New York, 1, 1847, p. 185, pl. 40, figs. 4a–b; 5a–b.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 82, fig.

Cyrtolites acutus Emmons, Amer. Geology, 1, pt. 2, 1855, p. 166, pl. 6, figs. 4, 5.

Trenton: Middleville, Trenton Falls, etc., New York.

Sinuites cancellatus corrugatus (Hall).

Bellerophon bilobatus var. corrugatus Hall, Pal. New York, 1, 1847, p. 185, pl. 40, figs. 6a–b.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 82, fig.

Trenton: Middleville, Trenton Falls, etc., New York.

Sinuites cancellatus trentonensis (Ulrich and Scofield).

Bellerophon bilobatus (part) of authors.

Protowarthia cancellata var. trentonensis Ulrich and Schofield, Geol. Minnesota, 3, pt. 2, 1897, p. 872.

Trenton: Minnesota; Iowa; Ohio; etc.

Sinuites cassinensis (Whitfield).
Bellerophon Cassinensis Whitfield, Bull. Amer. Mus., Nat. Hist., 1, 1886, p. 318, pl. 26, figs. 8, 9.—Seely, Vermont State Geol., Rept. 7, 1910, pl. 61, fig. 14.
Protowarthia cassinensis Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 848 (gen. ref.).
Canadian (Beekmantown): Fort Cassin, Vermont.

Sinuites concinna (Ulrich and Scofield).
Protowarthia concinna Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 874, pl. 63, figs. 36–39.
Richmond (Maquoketa): Near Spring Valley, Minnesota.
Holotype.—Cat. No. 45958, U.S.N.M.

Sinuites globularis (Miller and Faber).
Bellerophon globularis Miller and Faber, Jour. Cincinnati Soc. Nat. Hist., 17, 1894, p. 28, pl. 1, figs. 21, 22.
Eden: Cincinnati, Ohio.
Observation.—Compare with S. granistriata Ulrich.

Sinuites granistriatus (Ulrich).
Protowarthia granistriata Ulrich, Geol. Minnesota, 3, pt. 2, 1897, p. 870, pl. 63, figs. 28–30.
Eden (Southgate): Cincinnati, Ohio, and vicinity.
Cotypes.—Cat. No. 45959, U.S.N.M.

Sinuites morrowensis (Miller and Dyer).
Bellerophon morrowensis Miller and Dyer, Cont. to Pal., No. 2, 1878, p. 8, pl. 3, fig. 6.
Protowarthia? morrowensis Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 874 (gen. ref.).
Richmond: Morrow, Ohio.
Observation.—Not recognizable without a restudy of the type.

Sinuites obesus (Ulrich).
Protowarthia obesa Ulrich, Geol. Minnesota, 3, pt. 2, 1897, p. 874, pl. 63, figs. 45–47.
Trenton (Hermitage): Burgin and Danville, Kentucky.
Cotypes.—Cat. Nos. 45961, 45962, U.S.N.M.

Sinuites pervolutus (Ulrich and Scofield).
Protowarthia pervoluta Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 871, pl. 63, figs. 21–27.—Schuchert, Proc. U. S. Nat. Mus., 22, 1900, p. 164.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 611, fig. 817d-f.
Black River (Decorah) and Trenton (Curdsville, Hermitage): St. Paul, etc., Minnesota; Curdsville, Kentucky; Baffin Land.
Cotypes.—Cat. Nos. 45968–45970, U.S.N.M.

Sinuites planodorsatus (Ulrich).
Protowarthia planodorsata Ulrich, Geol. Minnesota, 3, pt. 2, 1897, p. 871, pl. 63, figs. 31–35.
Eden (Southgate): Covington, Kentucky.
Cotypes.—Cat. No. 45960, U.S.N.M.

Sinuites rectangularis (Ulrich and Scofield).
Protowarthia rectangularis Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 868, pl. 63, figs. 15–20.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 611, fig. 817a–c.

Sinuites rectangularis—Continued.
Black River (Platteville): Mineral Point, etc., Wisconsin; Dixon, Illinois; Minneapolis, Cannon Falls, etc., Minnesota.
Cotypes.—Cat. Nos. 45971, 45972, U.S.N.M.

Sinuites rossi (Collie).
Protowarthia rossi Collie, Bull. Geol. Soc. America, 14, 1903, p. 420, pl. 59, figs. 6, 7.
Canadian (Beekmantown): Bellefonte, Pennsylvania.

Sinuites subcompressus (Ulrich).
Protowarthia subcompressa Ulrich, Geol. Minnesota, 3, pt. 2, 1897, p. 873, pl. 63, figs. 40–44.—Cumings, 32d Ann. Rep. Dep. Geol. and Nat. Res. Indiana, 1908, p. 972, pl. 39, figs. 5–5b.
Richmond (Waynesville): Versailles, Indiana; Butler County, Ohio.
Cotypes.—Cat. Nos. 45973, 45974, U.S.N.M.

Sinuites tenuissimus (Collie).
Protowarthia tenuissima Collie, Bull. Geol. Soc. America, 14, 1903, p. 420, pl. 59, figs. 10, 11.
Trenton: Bellefonte, Pennsylvania.

SINUOPEA Ulrich. Genotype: Holopea sweeti Whitfield.
Sinuopea Ulrich, Bull. Geol. Soc. Amer., 22, 1911, p. 630.

Sinuopea obesa (Whitfield).
Holopea obesa Whitfield, Geol. Wisconsin, 4, 1882, p. 348, pl. 27, fig. 11.—Sardeson, Bull. Minnesota Acad. Nat. Sci., 4, 1896, p. 97, pl. 5, fig. 19; Jour. Geol., 11, 1903, p. 481, fig. 21.
Ozarkian (Oneota): River Falls, Wisconsin.

Sinuopea strongi (Whitfield).
Euomphalus Strongi Whitfield, Wisconsin Geol. Surv., Ann. Rep. for 1877, 1878, p. 66; Geol. Wisconsin, 4, 1882, p. 200, pl. 4, figs. 1, 2.—Chamberlin, Geol. Wisconsin, 1, 1883, p. 142, fig.
Oxydiscus Strongi Koken, Neues Jahrb. Min., Geol., Pal., 6, Beilage-Band, 1889, p. 392.
Ozarkian (Oneota): Richland County, Wisconsin.

Sinuopea turgida (Hall).
Pleurotomaria? turgida Hall, Pal. New York, 1, 1847, p. 12, pl. 3, figs. 9, 10.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 160.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 720, figs.
Holopea turgida Billings, Canadian Nat. Geol., 4, 1859, p. 350.—Koken, Neues Jahrb. Min. Geol. Pal., 6, Beilage-Band, 1889, p. 478.—Whitfield, Bull. Amer. Mus. Nat. Hist., 2, 1889, p. 50, pl. 9, figs. 3–7.—Calvin, Amer. Geol., 10, 1892, p. 147; Bull. Lab. Nat. Hist. State Univ. Iowa, 2, 1892, p. 192.—Cleland, Bull. Amer. Pal., 3, 1900, p. 253, pl. 15, fig. 14.
Ozarkian: Saratoga County, etc., New York (Little Falls); Iowa.

SIPHONIA CRATERA Roemer. See Palæomanon cratera.

SIPHONIA IMBRICATO-ARTICULATA Roemer. See Astylospongia imbricatoarticulata.

SIPHONOCRINUS Miller. Genotype: Glyptocrinus nobilis Hall.
Siphonocrinus Miller, Amer. Geol., 1, 1888, p. 263; N. A. Geol. Pal., 1889, p. 281.—Wachsmuth and Springer, Proc. Acad. Nat. Sci. Philadelphia, 1890, p. 371.—Weller, Bull. Chicago Acad. Sci., Nat. Hist. Surv., 4, pt. 1, 1900, p.

SIPHONOCRINUS—Continued.

85, fig. 40.—Bather, Treatise on Zool., pt. 3, Echinoderma, London, 1900, p. 199.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 554.—Springer, Zittel-Eastman Textb. Pal., 2d ed., 1913, p. 187.

Siphonocrinus armosus (McChesney).

Eucalyptocrinus armosus McChesney, Desc. New Fossils, 1861, p. 95, fig.—Hall, 20th Rep. New York State Mus. Nat. Hist., 1868, pl. 10, fig. 11.—McChesney, Trans. Chicago Acad. Sci., 1, 1868, p. 23, pl. 7, fig. 6.

Glyptocrinus armosus Hall, 20th Rep. New York State Cab. Nat. Hist., rev. ed., 1870, p. 373, pl. 10, fig. 11.—Billings, Amer. Jour. Sci. Arts, 2d ser., 48, 1869, p. 73; Canadian Nat., n. s., 4, 1869, p. 281, fig. 3; Ann. Mag. Nat. Hist., 4th ser., 5, 1870, p. 255; Pal. Foss., Geol. Surv. Canada, 2, pt. 1, 1874, p. 94.—Whitfield, Geol. Wisconsin, 4, 1882, p. 284, pl. 16, fig. 11.

Glyptaster armosus Wachsmuth and Springer, Proc. Acad. Nat. Sci. Philadelphia, 1881, p. 370 (Rev. Pal., pt. 2, p. 196).

Siphonocrinus armosus Miller, Amer. Geol., 1, 1888, p. 264.—Wachsmuth and Springer, Mem. Mus. Comp. Zool. Harvard, 20, 1897, p. 211, pl. 19, fig. 3a-c.

Glyptocrinus siphonatus Hall, Rep. Sup. Geol. Surv. Wisconsin, 1861, p. 22; 20th Rep. New York State Cab. Nat. Hist. (extras, 1865), 1868, p. 328, pl. 10 (1), fig. 10.—Billings, Amer. Jour. Sci. Arts, 2d ser., 48, 1869, p. 73; Ann. Mag. Nat. Hist., 4th ser., 5, 1870, p. 256.

Niagaran (Racine): Racine, Greenfield, and Waukesha, Wisconsin; Chicago, Illinois.

Siphonocrinus nobilis (Hall).

Glyptocrinus nobilis Hall, Rep. Sup. Geol. Surv. Wisconsin, 1861, p. 21; 20th Rep. New York State Cab. Nat. Hist., 1868 (extras, 1865), p. 328, pl. 10, fig. 9; rev. ed., 1870, p. 372, pl. 10, figs. 9, 10.—Whitfield, Geol. Wisconsin, 4, 1882, p. 283, pl. 16, figs. 9, 10.

Siphonocrinus nobilis Miller, Amer. Geol., 1, 1888, p. 265; N. A. Geol. Pal., 1889, p. 281, fig. 428.—Weller, Bull. Chicago Acad. Sci., 4, pt. 1, 1900, p. 86, pl. 2, fig. 1.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 554, fig. 1885.

Niagaran (Racine): Racine, Waukesha, etc., Wisconsin; Chicago, Illinois.

Siphonocrinus pentagonus Wachsmuth and Springer.

Siphonocrinus pentagonus Wachsmuth and Springer, Mem. Mus. Comp. Zool. Harvard, 20, 1897, p. 213, pl. 19, figs. 4a, b.

Niagaran (Racine): Racine, Waukesha, etc., Wisconsin.

SIPHONOTRETA Verneuil. Genotype: Crania unguiculata Eichwald.

Siphonotreta Verneuil, Geol. de la Russie d'Europe et des Mont. de l'Oural, 2, 1845, p. 286.—Kutorga (in part), Verhandl. Russ-kais. min. Gesell. St. Petersburg, No. 12, 1847, pp. 261-263.—D'Orbigny, Compt. Rend. de l'Acad. Sci., 25, 1847, p. 269.—Morris, Ann. Mag. Nat. Hist., 2d ser., 4, 1849, pp. 315-320; Rep. British Assoc. Adv. Sci., Notices and Abstracts, 1850, pp. 57, 58.—Davidson, British Foss. Brach., Pal. Soc., 1853, p. 131.—Pictet, Traite de Pal., 2d ed., 4, 1857, p. 72.—Chapman, Canadian Jour., n. s., 3, 1858, p. 160.—Eichwald, Leth. Rossica, ancienne periode, 1, sec. 2, 1860, p. 915.—Seebach, Zeitschr. Deutsch. geol. Gesell. for 1865, 17, Heft 2, p. 341.—Davidson, British Foss. Brach., 3, pt. 7, p. 75.—Quenstedt, Petrefactenkunde Deutschlands, Abth. 1, 2, Brach., 1871, pp. 673-674.—Dall, Amer. Jour. Conch., 7, 1871, p. 75; Bull. U. S. Nat. Mus., 8, 1877, p. 62.—Davidson, Geol. Mag., n. s., dec. 2, 4, 1877, pp. 13-16.—Zittel, Handb. Pal., 1, Munich, 1880, p. 665.—Davidson, British Foss. Brach., 5, pt. 2, 1883, pp. 217-219.—Œhlert, Manual Conch., Fischer, 1887, p. 1265.—Miller, N. A. Geol. Pal., 1889, p.

SIPHONOTRETA—Continued.

371.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pp. 110, 167; 45th Rep. New York State Mus., 1892, pp. 568, 569.—Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 358.—Hall and Clarke, 11th Ann. Rep. New York State Geol., 1894, p. 252.—Koken, Die Leitfossilien, Leipzig, 1896, p. 229.—Walcott, Smiths. Misc. Coll., 53, 1908, pl. 11, pp. 142, 146; Mon. U. S. Geol. Surv., 51, pt. 1, 1912, p. 624.—Schuchert, Zittel-Eastman Textb. Pal., 1900, p. 309; 2d ed., 1913, p. 375.

Siphonotreta(?) micula McCoy.

Siphonotreta micula McCoy, Ann. Nat. Hist., 2d ser., 8, 1851, p. 389; British Pal. Foss., 1852, p. 188, pl. 1, fig. 3.—Salter, Siluria, 2d ed., 1859, p. 212, fig. 3.—Harkness, Geol. Mag., 2, 1865, p. 431.—Davidson, British Sil. Brach., pt. 7, 1866, pp. 76, 77, pl. 8, figs. 2-6.—Ami, Rep. Progr. Geol. Nat. Hist. Surv. Canada for 1887-88, 1889, p. 52K.

Lower Ordovician: Great Britain; Point Levis, Quebec (Levis).

Siphonotreta(?) minnesotensis Hall and Clarke.

Siphonotreta? minnesotensis Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pp. 112, 177, pl. 4, figs. 37, 38.—Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 358, pl. 29, figs. 23, 24.—Hall and Clarke, 48th Rep. New York State Mus., 2, for 1895, 1897, p. 332, pl. 2, figs. 9, 10; 14th Rep. State Geol. New York for 1894, 1897, p. 332, pl. 2, figs. 9, 10.—Ruedemann, Bull. New York State Mus., 49, 1902, p. 14, pl. 1, figs. 4, 5.

Black River: Minneapolis, Minnesota (Platteville); Rysedorph Hill, Rensselaer County, New York (Rysedorph).

SIPHONOTRETA SCOTICA Whiteaves. See Schizambon canadensis.

SIPHONOTRETA SCOTICA var. CANADENSIS Ami. See Schizambon canadensis.

SKENIDIUM Hall. See Scenidium Hall.

SKENIDIUM HALLI Safford. See Scenidium anthonense.

SKENIDIUM PYRAMIDATA Hall. See Scenidium pyramidale.

SKOLITHUS James. See Scolithus Haldeman.

SOLEMYA Lamarck. See Solenomya Lamarck.

SOLENOMYA Lamarck. Genotype: S. australis Lamarck.

Solemya Lamarck, Hist. Nat. An. sans Vert., 2, 1818, p. 488.

Solenomya Pictet, Traite de Pal., 2d ed., 3, 1855, p. 572.—Miller, N. A. Geol. Pal., 1889, p. 512.—Hind, Mon. British Carb. Lamell. Pal. Soc., 1900, p. 435.

Solenomya? insperata Ruedemann.

Solenomya? insperata Ruedemann, Bull. New York State Mus., 162, 1912, p. 105, pl. 6, figs. 13, 14.

Trenton (Snake Hill): Snake Hill, Saratoga County, New York.

SOLENOPLEURA Angelin. Genotype: Solenopleura holometopa Angelin.

Solenopleura Angelin, Pal. Scandinavica, 3d ed. Holmiæ, 1854, p. 26.—Salter, Mem. Geol. Surv. Great Britain, 3, 1866, p. 305; ibid., 2d ed., 1881, p. 499.—Walcott, Bull. U. S. Geol. Surv., 10, 1884, p. 36.—Matthew, Canadian Rec. Sci., 2, 1887, p. 357; Trans. Roy. Soc. Canada, 5, 1888, pp. 134, 152.—Miller, N. A. Geol. Pal., 1889, p. 567.—Beecher, Amer. Geol., 16, 1895, p. 178.—Koken, Die Leitfossilien, Leipzig, 1896, p. 21, fig. 13, figs. 3, 4.—Œhlert, Bull. Soc. Geol. France, 24, 1896, p. 111, fig. 18.—Pompeckj, Jahrb. d. k. k. geol. Reich., 45, 1896, p. 546.—Lindström, Kongl. Sven. Vet.-Akad. Handl., 34, No. 8, 1901, p. 25.

Solenopleura jerseyensis (Weller).

Liostracus? jerseyensis Weller, Ann. Rep. State Geol. New Jersey for 1899, 1900, p. 51, pl. 1, figs. 1-8.

Solenopleura jerseyensis Weller, Geol. Surv. New Jersey Pal., 3, 1903, p. 119, pl. 2, figs. 1-8.

Upper Cambrian or Ozarkian (Kittatinny): Near Carpentersville, New Jersey.

SOLENOPORA Dybowski. Genotype: S. spongioides Dybowski.

Solenopora Dybowski, Chæt. Ostbalt. Sil. Form. St. Petersburg, 1877, p. 124.—Zittel, Handb. Pal., 1, 1880, p. 616.—Nicholson, Geol. Mag., dec. 3, 5, 1888, p. 19.—Brown, Geol. Mag., dec. 4, 1, 1894, pp. 146, 197.—Rothpletz, Sver. Geol. Under. ser. Ca, No. 10, 1913, p. 7.

Solenopora compacta (Billings).

Stromatopora compacta Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, pp. 55, 212 (adv. sheets, 1862).

Solenopora(?) compacta Nicholson and Etheridge, Geol. Mag., dec. 3, 2, 1885, p. 629, pl. 13, figs. 1-8.—Nicholson, Geol. Mag., dec. 3, 5, 1888, p. 20, fig. 2; Man. Pal., 1, 1889, p. 201, figs. 83a-83d.—Ami, Canadian Rec. Sci., 5, 1892, p. 97.—Brown, Geol. Mag., dec. 4, 1, 1894, p. 146, figs. 1, 2.—Winchell and Schuchert, Geol. Minnesota, 3, pt. 1, 1895, p. 80, pl. F, figs. 21-23.—Whiteaves, Pal. Foss. Geol. Surv. Canada, 3, pt. 3, 1897, p. 237.—Seward, Fossil Plants, Cambridge, 1, 1898, p. 189, fig. 38.—Rothpletz, Handl. Kgl. Sv. Vet-Akad., 43, No. 5, 1908, p. 12, pl. 3, figs. 1-6.—Seely, Vermont State Geol. Rep., 7, 1910, p. 274, fig. 24.—Rothpletz, Sver. Geol. Under., ser. Ca, No. 10, 1913, p. 11, pl. 1, figs. 5, 6.

Solenopora compacta var. minuta Ami, Ann. Rep. Geol. Nat. Hist. Surv. Canada, n. s., 3, pt. 2, 1888, p. 116k; Canadian Rec. Sci., 5, 1892, p. 96.

Solenopora Paquettiana Ami, Canadian Rec. Sci., 5, 1892, p. 98.

Tetradium peachii Nicholson and Etheridge, Ann. Mag. Nat. Hist., 4th ser., 20, 1877, p. 166, figs. d-g.

Tetradium Peachii var. canadense Foord, Cont. Micro. Pal. Geol. Surv. Canada, 1883, p. 24, pl. 6, figs. 1-1f.

Solenopora compacta Peachii Nicholson and Etheridge, Geol. Mag. London, 2, 1885, p. 530, pl. 13, figs. 2, 3, 9-11.

Solenopora spongioides Dybowski, Die Chætetiden der ostbaltischen Silur. Formation, 1877, p. 124, pl. 2, figs. 11a-b.

Actinostroma trentonensis Weller, Geol. Surv. New Jersey Pal., 3, 1903, p. 129, pl. 6, fig. 8; pl. 7, figs. 3, 4.

Solenopora compacta trentonensis Brown, Geol. Mag. London, 1, 1894, p. 146, fig. 2.—Ruedemann, Bull. New York State Mus., 133, 1909, p. 201.

Middle and Upper Ordovician: A widespread and abundant species in Esthonia, Russia, and North America.

SOLENOPORA COMPACTA var. MINUTA Ami. See Solenopora compacta.

SOLENOPORA COMPACTA PEACHII Nicholson and Etheridge. See Solenopora compacta.

SOLENOPORA COMPACTA TRENTONENSIS Brown. See Solenopora compacta.

SOLENOPORA SPONGIOIDES Dybowski. See Solenopora compacta.

SOLENOSPIRA Ulrich. See Ectomaria Koken.

SOWTERIA Whiteaves. Genotype: Whitella canadensis Raymond.

Sowteria Whiteaves, Ottawa Nat., 22, 1908, p. 112.

teria canadensis (Raymond).
Whitella canadensis Raymond, Amer. Jour. Sci., 20, 1905, p. 373.
Sowteria canadensis Whiteaves, Ottawa Nat., 22, 1908, p. 112, pl. 3, figs. 13–15.
Black River (Lowville): Aylmer, Quebec; Hog Back, near Ottawa, Ontario.

ATIOPORA Ulrich. Genotype: S. aspera Ulrich.
Spatiopora Ulrich, Jour. Cincinnati Soc. Nat. Hist., 5, 1882, p. 155; ibid., 6, 1883, p. 166.—Foord, Contr. Micro-Pal. Cambro-Sil., 1883, p. 20.—Miller, N. A. Geol. Pal., 1889, p. 323.—Ulrich, Geol. Surv. Illinois, 8, 1890, p. 381; Geol. Minnesota, 3, 1893, p. 319; Zittel's Textb. Pal. (Engl. ed.), 1896, p. 269.—Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 24.—Bassler, Bull. U. S. Geol. Surv., 292, p. 21.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 756.—Hennig, Archiv. fur Zool., 4, 1908, p. 12.—Bassler, Bull. U. S. Nat. Mus., 77, 1911, p. 106; Zittel-Eastman Textb. Pal., 1913.

atiopora? areolata Foord.
Spatiopora areolata Foord, Contr. Micro-Pal. Cambro-Sil., 1883, p. 21, pl. 5, figs. 1–1i.
Trenton: Hull, Quebec.

atiopora aspera Ulrich.
Spatiopora aspera Ulrich, Jour. Cincinnati Soc. Nat. Hist., 6, 1883, p. 166, pl. 7, figs. 5–5b; Zittel's Textb. Pal. (Engl. ed.), 1896, fig. 441 (p. 269).—Bassler, Zittel-Eastman Textb. Pal., 1913, p. 329, fig. 468.
Monticulipora aspera J. F. James, Jour. Cincinnati Soc. Nat. Hist., 18, 1895, p. 82.
Maysville (Bellevue): Hamilton and Cincinnati, Ohio.
Cotypes.—Cat. No. 43254, U.S.N.M.

atiopora corticans (Nicholson).
Chætetes corticans Nicholson, Quart. Jour. Geol. Soc. London, 30, 1874, p. 512, pl. 19, figs. 13, 14; Pal. Ohio, 2, 1875, p. 210, pl. 22, figs. 6, 6a.
Chætetes tuberculatus (not Milne-Edwards and Haime) Nicholson, Ann. Mag. Nat. Hist., 4th ser., 18, 1876, p. 91.
Monticulipora (Monotrypa) tuberculata (not Milne-Edwards and Haime) Nicholson, Genus Monticulipora, 1881, p. 200, pl. 4, figs. 2–2d.
Spatiopora corticans Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1908, p. 407.
Richmond (Waynesville): Warren and Clinton Counties, Ohio; Indiana.

atiopora iowensis Ulrich.
Spatiopora iowensis Ulrich, Geol. Minnesota, 3, 1893, p. 321.
Richmond (Maquoketa): Graf, Iowa.
Cotypes.—Cat. No. 43253, U.S.N.M.

atiopora labeculosa Ulrich.
Spatiopora labeculosa Ulrich, Geol. Minnesota, 3, 1893, p. 320, pl. 28, figs. 1, 2.
Black River (Decorah): Minneapolis, St. Paul, and Fountain, Minnesota.
Holotype.—Cat. No. 43255, U.S.N.M.

patiopora lineata Ulrich.
Spatiopora lineata Ulrich, Jour. Cincinnati Soc. Nat. Hist., 6, 1883, p. 167, pl. 7, fig. 7.
Maysville (Bellevue): Hamilton and Cincinnati, Ohio.
Holotype.—Cat. No. 43252, U.S.N.M.

Spatiopora lineata incepta Ulrich.
Spatiopora maculosa var. incepta Ulrich, Geol. Minnesota, 3, 1893, p. 320.
Spatiopora lineata-incepta Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 407.—Bassler, Bull. U. S. Nat. Mus., 77, 1911, p. 107, pl. 7, figs. 9, 10.
Black River (Decorah): Chatfield, Minnesota.
Middle Ordovician (Wesenberg): Wesenberg, Esthonia, Russia.
Cotypes and *plesiotype*.—Cat. Nos. 43299, 57206, U.S.N.M.

Spatiopora maculata (Hall).
——— ——— Hall, Pal. New York, 2, 1852, pl. 40E, figs. 7 a, b.
Paleschara maculata Hall, 28th Ann. Rep. New York State Mus., doc. ed., 1876, pl. 8, figs. 9, 10; ibid., mus. ed., 1879, p. 121, pl. 8, figs. 9–13; 11th Ann. Rep. Indiana Geol. Nat. Hist., 1882, p. 246, pl. 7, figs. 9–13.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 591, figs.
Paleschara? aspera Hall, 28th Ann. Rep. New York State Mus., doc. ed., 1876, pl. 8, figs. 11–13.
Leptotrypa maculata Ulrich, Jour. Cincinnati Soc. Nat. Hist., 6, 1883, p. 155.
Spatiopora maculata Bassler, Bull. U. S. Geol. Surv., 292, 1906, p. 22, pl. 8, figs. 1–4; pl. 9, figs. 10, 11.
Niagaran: Waldron, Indiana, and Newsom, Tennessee (Waldron); Lockport, New York; Grimsby, Ontario (Rochester).
Plesiotype.—Cat. No. 35463, U.S.N.M.

Spatiopora maculosa Ulrich.
Spatiopora maculosa Ulrich, Jour. Cincinnati Soc. Nat. Hist., 6, 1883, p. 167, pl. 7, fig. 6.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 879, pl. 32, fig. 9.
Maysville (Corryville): Cincinnati, Ohio, and vicinity.
Holotype.—Cat. No. 43257, U.S.N.M.

SPATIOPORA MACULOSA var. INCEPTA Ulrich. See Spatiopora lineata incepta.

Spatiopora montifera Ulrich.
Spatiopora montifera Ulrich, Jour. Cincinnati Soc. Nat. Hist., 6, 1883, p. 16 pl. 6, figs. 1, 1a, pl. 7, fig. 8.
Richmond (Waynesville): Waynesville, Clarksville, and Oxford, Ohio.
Holotype.—Cat. No. 43256, U.S.N.M.

Spatiopora tuberculata (Milne-Edwards and Haime).
Chætetes tuberculatus Milne-Edwards and Haime, Pol. Foss. Terr. Pal., 1851, p. 268, pl. 19, figs. 3, 3a.
Monticulipora tuberculata Hall, 12th Ann. Rep. Indiana Geol. Nat. Hist., 1883, p. 251, pl. 10, fig. 6.—James and James, Jour. Cincinnati Soc. Nat. Hist., 11, 1888, p. 21.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 422, fig.—J. F. James, Jour. Cincinnati Soc. Nat. Hist., 16, 1895, p. 78.
Spatiopora tuberculata Ulrich, Jour. Cincinnati Soc. Nat. Hist., 6, 1883, p. 166.—Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 407.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 880, pl. 32, fig. 10.
Maysville and Richmond: Cincinnati, Maysville, etc., Ohio: Indiana; Kentucky.

SPHÆREXOCHUS Beyrich. Genotype: S. mirus Beyrich.
Sphærexochus Beyrich, Ueber einige böhm. Tril., 1845, p. 19; Untersuchung uber Tril., 1846, p. 5.—Bell and Forbes, in Burmeister's Org. Tril., London, Suppl., App., 1846, p. 126.—Beyrich, Neues Jahrb. Min., Geol. Pal., 1846, p. 119.—Hawle and Corda, Abh. d. k. bohmischen Gesell. d. Wiss., 5 (ex-

SPHÆREXOCHUS—Continued.

tract), 1847, p. 137, pl. 7, fig. 72.—Salter, Mem. Geol. Surv. Gt. Britain, 1, 1848, p. 344.—McCoy, Ann. Mag. Nat. Hist., 2d ser., 4, 1849, p. 400.—Barrande, Neues Jahrb. f. Min., etc., 1850, p. 779; Syst. Sil. du Centre Boheme, 1, 1852, p. 805.—Salter, Mem. Geol. Surv. United Kingdom, dec. 7, 1853, pl. 3.—Pictet, Traite de Pal., 2d ed., 2, 1854, p. 521.—Nieszkowski, Archiv. f. Naturk. Liv.-Ehst-u. Kurl., 1, 1857, p. 594.—Salter, Mon. British Tril., Pal. Soc., 1864, p. 76.—Barrande, Syst. Sil. du Centre Boheme, 1, Suppl., 1872, p. 109.—Steinhardt, Beit. z. Naturk. Preus. Phys.-Oekon. Gesell., Konigsberg, 1874, p. 60.—Angelin, Pal. Scandinavica, 3d ed., Holmiae, 1878, p. 36.—Schmidt, Mem. l'Acad. Imp. Sci. St. Petersburg, 7th ser., 30, 1881, p. 188.—Zittel, Handb. Pal., 2, 1885, p. 619.—Miller, N. A. Geol. Pal., 1889, p. 567.—Koken, Die Leitfossilien, Leipzig, 1896, p. 33, fig. 23, fig. 3.—Reed, Geol. Mag., dec. 4, 5, 1898, p. 210.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 321.—Raymond, Zittel-Eastman Textb. Pal., 1913, p. 725.

SPHÆREXOCHUS CANADENSIS Billings. See Pseudosphærexochus canadensis.

SPHÆREXOCHUS MIRUS Roemer. See Sphærexochus romingeri.

Sphærexochus parvus Billings.

——— ——— Billings, Can. Nat. Geol., 4, 1859, p. 468, fig. 36.

Sphærexochus parvus Billings, Geol. Canada, Geol. Surv. Canada, 1863, p. 133, fig. 66; Pal., Foss., 1, Geol. Surv. Canada, 1865, p. 180, fig. 161a, b.—Miller, N. A. Geol. Pal., 1889, p. 567, fig. 1060.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 974, fig.—Raymond, Annals Carnegie Mus., 3, 1905, p. 366, figs. 4, 5; p. 372, pl. 14, fig. 22; 7th Rep. Vermont State Geol., 1910, p. 246, pl. 36, fig. 22.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 321, fig. 1634e.

Chazyan: Island of Montreal and Mingan Islands, Canada; Chazy, Valcour Island, etc., New York; Isle La Motte, Vermont (Crown Point).

SPHÆREXOCHUS PISUM Foerste. See Deiphon forbesi.

Sphærexochus romingeri Hall.

Sphærexochus mirus Roemer, Sil. Fauna West Tennessee, 1860, p. 81, pl. 5, fig. 20.—Hall, Adv. sheets 18th Rep. New York State Cab. Nat. Hist., 1865, p. 30; 20th Rep. New York State Cab. Nat. Hist., 1867, p. 334.—Foerste, Bull. Sci. Lab. Denison Univ., 3, 1888, p. 121, pl. 13, fig. 6.

Sphærexochus romingeri Hall, Geol. Surv. Wisconsin, 1, 1867, p. 434; 20th Rep. New York State Cab. Nat. Hist., 1867, p. 375, pl. 21, figs. 4–7; 20th Rep. New York State Cab. Nat. Hist., 1870, rev. ed., p. 425, pl. 21, figs. 4–7.—Meek and Worthen, Geol. Surv. Illinois, 7, 1875, p. 510, pl. 24, fig. 4.—Whitfield, Geol. Wisconsin, 4, 1882, p. 311, pl. 21, figs. 1–3.—Chamberlin, ibid., 1, 1883, p. 195, fig.—Van Ingen, School of Mines Quart., 23, 1901, p. 35.—Kindle, 28th Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1904, p. 483, pl. 22, figs. 8–9, 12–15.—Weller, Bull. Chicago Acad. Sci., Nat. Hist. Surv., 4, pt. 2, 1907, p. 266, pl. 24, figs. 6–19.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 321, fig. 1635.

Niagaran: Milwaukee and Waukesha, Wisconsin; Bridgeport, Illinois (Racine); Cedarville, Ohio (Guelph); Independence County, Arkansas (St. Clair); Connor's Mill, etc., Indiana; West Tennessee (Brownsport).

SPHÆREXOCHUS ROMINGERI? Hall 1877. See Cheirurus niagarensis.

SPHÆROBOLUS Matthew. See Obolus subgenus Lingulobolus Walcott.

SPHÆROCOCCITES Sternberg. Type: S. ciliatus Sternberg.

Sphærococcites Sternberg, Flora Vorw., 2 (Versuch), pt. 5, 6, 1883, p. 28.

Sphærococcites(?) glomeratus Grabau.

Sphærococcites(?) glomeratus Grabau, Michigan Geol. Surv., Geol. Series, 1, 1909, p. 210, pl. 11, fig. 1.

Lower Monroan: Greenfield, Ohio (Greenfield); Roche de Boeuf, Lucas County, Ohio; Monroe County, Michigan (Raisin River).

SPHÆROCORYPHE Angelin. Genotype: S. dentata Angelin

Sphærocoryphe Angelin, Pal. Scandinavica, 3d ed., Holmiæ, 1878, p. 65.—Schmidt Mem. l'Acad. Imp. Sci. St. Petersburg, 7th ser., 30, 1881, pp. 123, 126, 12 166.—Zittel, Handb. Pal., 2, 1885, p. 618.—Miller, N. A. Geol. Pal., 1889, 567.—Clarke, Geol. Minnesota, 3, pt. 2, 1894, p. 738.—Reed, Geol. Mag., de 4, 3, 1896, p. 118; 5, 1898, p. 211.—Koken, Die Leitfossilien, Leipsig, 1896, 35.—Raymond, Annals Carnegie Mus., 3, 1905, p. 375.—Slocom, Field Mu Nat. Hist., Geol. Ser., 4, 1913, p. 77.—Raymond, Zittel-Eastman Textb. Pal 1913, p. 725.

Sphærocoryphe goodnovi Raymond.

Sphærocoryphe goodnovi Raymond, Annals Carnegie Mus., 3, 1905, p. 371, pl. fig. 23; ibid., 7, p. 78, pl. 19, figs. 16–18; 7th Rep. Vermont State Geol., 191 p. 246, pl. 36, fig. 23; pl. 39, figs. 16–18.

Chazyan (Crown Point): Chazy, New York.

Sphærocoryphe major Ruedemann.

Sphærocoryphe major Ruedemann, Bull. New York State Mus., 49, 1901, p. pl. 4, figs. 13, 14.

Mohawkian (Rysedorph): Rysedorph Hill, Rensselaer County, New York.

Sphærocoryphe maquoketensis Slocom.

Sphærocoryphe maquoketensis Slocom, Field Mus. Nat. Hist., Geol. Ser., 4, 191 p. 77, pl. 15, figs. 1–4.

Richmond (Maquoketa): Clermont, Elgin, and Bloomfield, Iowa.

Sphærocoryphe robustus Walcott.

Sphærocoryphe robustus Walcott, Cincinnati Quart. Jour. Sci., 2, 1875, p. figs. 18a, b.—Miller, N. A. Geol. Pal., 1889, p. 567, fig. 1061.

Ceraurus (Sphærocoryphe) robusta Clarke, Geol. Minnesota, 3, pt. 2, 1894, p. (gen. ref.).

Trenton: Trenton Falls, New York.

Sphærocoryphe salteri Billings.

Sphærocoryphe Salteri Billings, Cat. Sil. Fossils, Anticosti, Geol. Surv. Canad 1866, p. 63.

Gamachian (Ellis Bay): Junction Cliff, Anticosti.

SPHÆROCYSTIS Haeckel. See Sphærocystites Hall.

SPHÆROCYSTITES Jaekel (part). See Cœlocystis Schuchert.

SPHÆROCYSTITES Hall. Genotype: S. multifasciatus H

Sphærocystites Hall, Amer. Jour. Sci. Arts, 25, 1858, p. 279; Pal. New York, 3, 18 pp. 130, 151.—Miller, N. A. Geol. Pal., 1889, p. 282.—Jaekel, Stammes Pelmat., 1, 1899, p. 288.—Schuchert, Amer. Geol., 32, 1903, p. 232.—Zitt Grundzuge Pal., 1, 1910, p. 188.—Grabau and Shimer, N. A. Index Fossils, 1910, p. 470.

Sphærocystis Haeckel, Amphor. und Cystoid., 1896, pl. 3, fig. 10–13.—Bath Treatise on Zool. (Lankester), pt. 3, 1900, p. 63.

Sphærocystites bloomfieldensis Schuchert.
Sphærocystites bloomfieldensis Schuchert, Smiths. Misc. Coll., 47, pt. 2, 1904, p. 251.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 471.
Helderbergian (Keyser): Clark's Mill, near Bloomfield, Pennsylvania.
Cotypes.—Cat. No. 35059, U.S.N.M.

SPHÆROCYSTITES DOLOMITICUS Jaekel. See Cœlocystis subglobosus.

Sphærocystites globularis Schuchert.
Sphærocystites globularis Schuchert, Amer. Geol., 32, 1903, p. 233; Smiths. Misc. Coll., 47, 1904, p. 252, pl. 38, figs. 3–5; pl. 39, figs. 5, 6; text figs. 40, 41; Maryland Geol. Surv., Low. Dev., 1913, p. 247, pl. 36, fig. 1.
Helderbergian (Keyser): Keyser, West Virginia; Devils Backbone, Maryland.
Holotype.—Cat. No. 35053, U.S.N.M.

Sphærocystites globularis ovalis Schuchert.
Sphærocystites globularis ovalis Schuchert, Smiths. Misc. Coll., 47, 1904, p. 253, pl. 38, fig. 6; Maryland Geol. Surv., Low. Dev., 1913, p. 248, pl. 36, fig. 2.
Helderbergian (Keyser): Keyser, West Virginia.
Holotype.—Cat. No. 35054, U.S.N.M.

Sphærocystites multifasciatus Hall.
Sphærocystites multifasciatus Hall, Pal. New York, 3, 1859, p. 130, pl. 7a, figs. 1–4.—Jaekel, Stammesgeschichte der Pelmatozoen, 1, 1899, p. 289.—Schuchert, Amer. Geol., 32, 1903, p. 233; Smiths. Misc. Coll., 47, pt. 2, 1904, p. 250, figs. 38, 39, pl. 38, figs. 1, 2; pl. 39, figs. 1–4.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 470, fig. 1781.—Schuchert, Maryland Geol. Surv., Low. Dev., 1913, p. 245, pl. 34, figs. 11, 12; pl. 35, figs. 1–4.
Sphærocystis multifusciatus Haeckel, Beitr. Morph. u. Phyl. d. Echinodermen, 1896, p. 133.
Helderbergian (Keyser): Cumberland, Maryland; Keyser, West Virginia.
Plesiotypes.—Cat. Nos. 35052, 35058, U.S.N.M.

SPHÆRODICTYA Hall and Clarke. See Teganium Rauff.

SPHÆROLITHES NICHOLSONI Hinde. See Hindia sphæroidalis.

SPHÆRONIS Angelin. See Holocystites Hall.

SPHÆRONITES AURANTIUM Hisinger. See Echinosphærites aurantium.

SPHÆROPHTHALMUS Angelin. Genotype: S. flagellifer Angelin.
Sphærophthalmus Angelin, Pal. Scandinavica, 3d ed., Holmiæ (1854), 1878, p. 49.—Salter, Cat. Camb. Sil. Foss., 1873, p. 11.—Brögger, Die Sil. Etagen 2–3, Kristiania, 1882, p. 113.—Zittel, Handb. Pal., 2, 1885, p. 596.—Koken, Die Leitfossilien, Leipzig, 1896, p. 20, fig. 11, fig. 13.—Lindstrom, Kongl. Sven. Vet.-Acad. Handl., 34, No. 8, 1901, pp. 27, 29.—Lake, Paleontographical Soc., 1913, p. 73.

Sphærophthalmus alatus (Boeck).
Trilobites alatus Boeck, Keilhan's Gæa Norv., 1838, p. 143.
Sphærophthalmus alatus Angelin, Pal. Scandinavica, 3d ed., Holmiæ, 1878, p. 49, pl. 26, fig. 9.—Linnarsson, Afh. Sveriges Geol. Unders., ser. C, No. 43, 1880, p. 7, pl. 1, figs. 6–10.—Pompeckj, Beit. Phys.-Oekon Gesell., Konigsberg, 1890, p. 89, pl. 4, figs. 27, 27a.—Koken, Die Leitfossilien, Leipzig, 1896, p. 18, fig. 11, fig. 13.—Frech, Leth. geog., 1, Leth. Pal., 2, 1 Lief, 1897, pl. 1b, fig. 20a, b.—Lindström, Kongl. Sven. Vet.-Akad. Handl., 34, No. 8, 1901.

Sphærophthalmus alatus—Continued.
p. 29, pl. 3, figs. 31-34.—Matthew, Geol. Surv. Canada, Rep. Cambr. Rocks Cape Breton, 1903, p. 228.—Lake, Paleontographical Soc., 1913, p. 74 (see for complete bibliography).
Leptoplastus (Sphærophthalmus) alatus Brögger, Die Sil. Etagen 2-3, Kristiania, 1882, p. 119, pl. 2, fig. 14.
Lower Ordovician: Scandinavia; St. John County, New Brunswick; McNeil Brook, Cape Breton, Nova Scotia (Bretonian—Div. C3b).

Sphærophthalmus alatus canadensis Matthew.
Sphærophthalmus alatus var. canadensis Matthew, Trans. Royal Soc. Canada, 11, sec. 4, 1904, p. 107, pl. 17, figs. 11a, b, 12.
Canadian (Bretonian—Div. C3b): St. John, New Brunswick.

Sphærophthalmus flagellifer Angelin.
Sphærophthalmus flagellifer Angelin, Pal. Scandinavia, 1854, p. 49, pl. 26, fig. 7.—Linnarsson, Afh. Sveriges Geol. Unders., ser. C, No. 43, 1880, p. 12, pl. 1, figs. 13-17.
Leptoplastus (Ctenopyge) flagellifera Brögger, Die Sil. Etagen 2-3, Kristiania, 1882, p. 120, pl. 2, fig. 15a, b, 16, 17 (cites bibliography).
Ctenopyge flagellifer Matthew, Trans. Royal Soc. Canada, 9, sec. 4, 1892, p. 56, pl. 13, figs. 12a, b.—Frech, Leth. geog., 1, Leth. Pal., 2, 1 Lief, 1897, pl. 1b, fig. 21.
Lower Ordovician: Scandinavia; St. John, New Brunswick (Bretonian—Div. C3b).

Sphærophthalmus fletcheri Matthew.
Sphærophthalmus Fletcheri Matthew, Bull. Nat. Hist. Soc. New Brunswick, No. 19, 1901, p. 280, pl. 5, figs. 7a-f; Geol. Surv. Canada, Rep. Cambrian Rocks Cape Breton, 1903, p. 227, pl. 17, figs. 7a-f.
Canadian (Bretonian—Div. C3b): McAdam shore, East Bay, east of Bras d'Or Lake, Cape Breton, New Brunswick.

SPHENOLIUM Miller. Genotype: Orthodesma cuneiforme Miller.
Sphenolium Miller, N. A. Geol. Pal., 1889, p. 513.—Ulrich, Geol. Minnesota, 3, pt. 2, p. 623.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 984.

Sphenolium cuneiforme (Miller).
Orthodesma cuneiforme Miller, Jour. Cincinnati Soc. Nat. Hist., 3, 1881, p. 314, pl. 8, figs. 1, 1a.
Sphenolium cuneiforme Miller and Faber, ibid., 17, 1894, p. 141, pl. 8, figs. 5, 6.—Miller, N. A. Geol. Pal., 2d App., 1897, p. 785, fig. 1455.
Richmond: Versailles, Indiana.

Sphenolium faberi Miller.
Sphenolium faberi Miller, N. A. Geol. Pal., 1889, p. 513, fig. 924.
Maysville: Cincinnati, Ohio.

Sphenolium parallelum Ulrich.
Sphenolium parallelum Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 624, pl. 36, figs. 42, 43.
Black River (Platteville): Mineral Point, Wisconsin.

Sphenolium richmondense Miller.
Sphenolium richmondense Miller, N. A. Geol. Pal., 1889, p. 513, figs. 925, 926.—Miller and Faber, Jour. Cincinnati Soc. Nat. Hist., 17, 1894, p. 142.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 1021, pl. 48, fig. 5.
Richmond (Whitewater): Richmond, Indiana.

Sphenolium striatum Ulrich.
Sphenolium striatum Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 624, pl. 36, figs. 44, 45.
Trenton (Prosser): Goodhue County, Minnesota.
Holotype.—Cat. No. 46311, U.S.N.M.

SPHENOPHYCUS Ruedemann. Genotype: Sphenothallus latifolius Hall.
Sphenothallus (part) Hall and other authors.
Sphenophycus Ruedemann, Bull. New York State Mus., 162, 1912, p. 73.

Sphenophycus latifolius (Hall).
Sphenothallus latifolius Hall, Pal. New York, 1, 1847, p. 262, pl. 68, figs. 2a–f.
Sphenophycus latifolius Ruedemann, Bull. New York State Mus., 162, 1912, p. 73, pl. 1, figs. 1–10; pl. 2, figs. 1–14.
Trenton (Schenectady): Near Schenectady, New York.

SPHENOPHYLLUM Koenig. Genotype: Sphenophyllites emarginatum Koenig.
Sphenophyllum Koenig, Icon. Foss. Sect. London, 1825, pl. 12, fig. 149.—Brongniart, Prodr. d. Hist. Veg. Foss., 1828, p. 68.

Sphenophyllum primævum Lesquereux.
Sphenophyllum primævum Lesquereux, Proc. Amer. Phil. Soc., 17, 1877, p. 167, pl. 1, figs. 3–5.—Miller, Proc. Davenport Acad. Sci., 2, 1878, p. 206.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 980, figs.
Eden and Maysville: Cincinnati, Ohio, and vicinity.

SPHENOTHALLUS Hall. Genotype: S. angustifolius Hall.
Sphenothallus Hall, Pal. New York, 1, 1847, p. 261.—Roemer, Leth. geog., 1, Theil, Leth. Pal., Erste Lief, 1880, p. 126.—Miller, N. A. Geol. Pal., 1889, p. 143.—Nathorst, Geol. Foren. Stockholm Forhandl., 18, 1896, p. 228.—Ruedemann, Bull. New York State Mus., 162, 1912, p. 73.

Sphenothallus angustifolius Hall.
Sphenothallus angustifolius Hall, Pal. New York, 1, 1847, p. 261, pl. 68, fig. 1.—Ruedemann, 15th Rep. State Geol. New York for 1895, 1898, p. 705, pl. 4, fig. 40; 49th Rep. New York State Mus., 2, 1898, p. 705, pl. 4, fig. 40.—Miller, N. A. Geol. Pal., 1889, p. 144, fig. 75.—Ruedemann, Bull. New York State Mus., 162, 1912, p. 73.
Sphenothallus cfr. angustifolius Nathorst, Geol. Foren Forhandl., 6, 1883, p. 315, pl. 15; ibid., 18, 1896, p. 228.
Trenton (Canajoharie): Between Canajoharie and Schoharie, New York.

SPHENOTHALLUS LATIFOLIUS Hall. See Sphenophycus latifolius.

SPHYRADOCERAS Hyatt. See Trochoceras Barrande.

SPIRIFER Sowerby. Genotype: Anomites striatus Martin.
Spirifer Sowerby, Min. Conch., 2, 1815, p. 41.—Billings, Canadian Nat. Geol., 1, 1856, p. 134.—Pictet, Traite de Pal., 2d ed., 4, 1857, p. 31.—Meek and Hayden, Pal. Upper Missouri, Smiths. Contr. Knowl., 14, 172, 1864, p. 17.—Zittel, Handb. Pal., 1, 1880, p. 682.—Waagen, Mem. Geol. Surv. India, Pal. Indica, 13th Ser., 1, 1883, p. 507.—Hall and Clarke, Nat. Hist. New York, 8, pt. 2, 1893, pp. 1–40; 13th Rep. New York State Geol., 1895, p. 751.—Koken, Die Leitfossilien, Leipzig, 1896, p. 243, figs. 205, 1.—Grabau, Bull. Buffalo Soc. Nat. Sci., 6, 1899, p. 207.—Girty, 20th Ann. Rep. U. S. Geol. Surv., 1900, pp. 50–55.—Beede, Univ. Geol. Surv. Kansas, 6, 1900, p. 98.—Schellwien, Abhandl. d. k. k. geol. Reichsanst., 16, Heft 1, 1900, p. 69.—Grabau, Bull.

SPIRIFER—Continued.

Buffalo Soc. Nat. Sci., 7, 1901, p. 197; Bull. New York State Mus., 45, 1901, p. 197.—Frech, Leth. geog., 1, Theil, Leth. Pal., 2, 4th Lief, 1902, p. 588.—Loomis, Bull. New York State Mus., 69, 1903, p. 900.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 315.—Schuchert, Zittel-Eastman Textb. Pal. 1900, p. 335; 2d ed., 1913, p. 410.

Spirifera Billings, Canadian Jour., 6, 1861, p. 253.—Hall, 20th Rep. New York State Cab. Nat. Hist., 1867, p. 251; Nat. Hist. New York, 4, 1867, p. 186.—White, Wheeler's Expl. and Surv. west of the 100th Merid., 1875, p. 90.—Herrick, Bull. Sci. Lab. Denison Univ., 4, 1888, p. 14.—Nettelroth, Kentucky Fossil Shells, Mem. Kentucky Geol. Surv., 1889, p. 105.—Miller, N. A. Geol. Pal., 1889, p. 371.—Hall, Bull. Geol. Soc. Amer., 1, 1890, p. 567; 9th Ann. Rep. New York State Geol., 1890, p. 9.

Delthyris Dalman, Kongl. Svenska Vet.-Akad. Handl. for 1827, 1828, pp. 93, 99.—Hall, Pal. New York, 2, 1852, p. 65, footnote.—Dall, Amer. Jour. Conch., 6, 1870, p. 116.—Hall and Clarke, Pal. New York, 8, pt. 2, 1893, pp. 9, 16, under caption Septati (not p. 19).—Schuchert, Zittel-Eastman Textb. Pal., 1913, p. 411. (Genotype: Delthyris elevata Dalman.)

Spirifera "lamellosa" Hall, 9th Ann. Rep. New York State Geol., 1890, p. 11 (=Delthyris).

Eospirifer Schuchert, Zittel-Eastman Textb. Pal., 1913, p. 411. (Genotype: Spirifer radiata Sowerby.)

Spirifer (Eospirifer) asperatus (Ringueberg).

Spirifera asperata Ringueberg, Bull. Buffalo Soc. Nat. Sci., 5, 1886, p. 16, pl. 2, fig. 5.

Clinton (Rochester): Lockport, New York.

SPIRIFER BICOSTATUS Hall. See Reticularia bicostata.

SPIRIFERA BICOSTATUS? var. PETILA Hall. See Reticularia bicostata petila.

SPIRIFER BIFORATA var. LYNX Hall. See Platystrophia biforata.

SPIRIFER BILOBUS Hall. See Bilobites bilobus.

Spirifer (Delthyris) corallinensis (Grabau).

Spirifer crispus Hall (not Hisinger), Pal. New York, 2, 1852, p. 328, pl. 74, figs. 9a–h.

Spirifer crispus corallinensis Grabau, Bull. Geol. Soc. Amer., 11, 1900, p. 352; Bull. New York State Mus., 45, 1901, p. 199.

Spirifer modestus corallinensis Schuchert, Amer. Geol., 31, 1903, p. 166.

Spirifer corallinensis Grabau, Bull. New York State Mus., 69, 1903, p. 1042, fig. 6.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 320, fig. 405.—Grabau, Bull. New York State Mus., 92, 1906, p. 109, fig. 10.—Foerste, Cincinnati Soc. Nat. Hist., Jour., 21, 1909, p. 18.

Cayugan: Schoharie County, New York (Cobleskill and Rondout); Kokomo, Indiana (Kokomo).

Helderbergian (Decker-Keyser): Becraft Mountain, near Hudson, New York.

Spirifer (Delthyris) crispatus (Hall and Clarke).

Spirifer crispatus Hall and Clarke, Pal. New York, 8, pt. 2, 1895, p. 360, pl. 36, figs. 9, 10; 48th Rep. New York State Mus., 2, for 1895, 1897, p. 355, pl. 7, figs. 12, 13; 14th Rep. State Geol. New York, 1897, p. 355, pl. 7, figs. 12, 13.

"Niagara group, Maryland."

Spirifer (Delthyris) crispus (Hisinger).

Terebratula crispa Hisinger, Svenska Vet.-Akad. Handl., 1826, tab. 7, fig. 4.

Spirifer crispus Hall, Amer. Jour. Sci., 20, 1849, p. 228.—Davidson, Bull. Soc. Geol. France, 2d ser., 5, 1848, p. 325, pl. 3, fig. 42; Pal. New York, 2, 1852, p. 262, pl. 54, fig. 3; p. 328, pl. 74, fig. 9.—Salter, Sutherland's Jour. Voyage in Baffin's Bay, etc., 2, App., 1852, p. 225, pl. 5, fig. 8.—Marcou, Geol. Map United States and British Prov., etc., 1853, p. 27, pl. 2, fig. 5.—Beecher and Clarke, Mem. New York State Mus., 1, 1889, p. 75, pl. 6, figs. 6, 7.—Hall and Clarke, Pal. New York, 8, pt. 2, 1893, pp. 19, 20, 36, pl. 36, figs. 1–6.—Grabau, Bull. New York State Mus., 45, 1901, p. 199, fig. 118; Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 199, fig. 118.—Clarke and Ruedemann, Mem. New York State Mus., 5, 1903, p. 42, pl. 4, figs. 10–20; Bull. New York State Mus., 69, 1903, p. 1046.—Raymond, Ann. Carnegie Mus., 3, 1904, p. 146, figs. 49, 50.—Whiteaves, Geol. Surv. Canada, Pal. Foss., 3, pt. 4, 1906, p. 253, pl. 27, fig. 1.

Spirifera crispa Winchell and Marcy, Mem. Boston Soc. Nat. Hist., 1, 1865, p. 94.—Davidson, Mon. British Sil. Brach., Pal. Soc., 1867, p. 97, pl. 10, figs. 13–15.—Hall, 28th Rep. New York State Mus. Nat. Hist., 1879, p. 157, pl. 24, figs. 6–12, 19; 11th Rep. State Geol. Indiana, 1882, p. 295, pl. 24, figs. 6–12, 19; 2d Ann. Rep. New York State Geol., 1883, pl. 61, figs. 1–6.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1003, figs.—Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 2, 1895, p. 62.

Delthyris crispa Dalman, Kongl. Vet.-Akad. Handl. for 1827, 1828, p. 122, pl. 3, fig. 6.

Delthyris staminea Hall, Geol. New York, Rep. 4th Dist., 1843, p. 105, fig. 3.—Owen, Amer. Jour. Sci. Arts, 48, 1845, p. 313, figs. 3, 3b.

Spirifer staminea Emmons, Man. Geol., 1860, p. 109, fig. 99.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 1030, figs.

Middle Silurian: Europe and America; Niagaran of New York, Ontario, Nova Scotia, Arctic America, Indiana, Kentucky, and Tennessee.

SPIRIFER CRISPUS CORALLINENSIS Grabau. See Spirifer (Delthyris) corallinensis.

Spirifer (Delthyris) crispus simplex (Hall).

Spirifera crispa var. Hall, Trans. Albany Inst., 4, 1863, p. 212.

Spirifera crispa var. simplex Hall, 28th Rep. New York State Mus. Nat. Hist., 1879, p. 157, pl. 24, figs. 1–5; 11th Rep. State Geol. Indiana, 1882, p. 296, pl. 24, figs. 1–5.—Nettelroth, Kentucky Fossil Shells, Mem. Kentucky Geol. Surv., 1889, p. 111, pl. 17, figs. 36, 37.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1004, figs.

Spirifer crispus var. simplex Beecher and Clarke, Mem. New York State Mus., 1, 1889, p. 75, pl. 6, figs. 4, 5.

Spirifer (Reticularia) crispus var. simplex Kindle and Breger, 28th Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1904, p. 442, pl. 8, figs. 26–28.

Niagaran: Waldron and St. Paul, Indiana; Newsom, Tennessee (Waldron and Laurel); Louisville, Kentucky (Louisville); Hamilton County, Indiana.

Plesiotype.—Cat. No. 51333, U.S.N.M. (Nettelroth).

SPIRIFER DECEMPLICATUS Emmons. See Spirifer (Delthyris) sulcata.

SPIRIFER DUBIUS Nettelroth. See Reticularia dubia.

Spirifer (Delthyris) eriensis (Grabau).

Spirifer eriensis Grabau, Bull. Geol. Soc. Amer., 11, 1900, p. 366, pl. 21, figs. 2 a–b; Bull. New York State Mus., 45, 1901, p. 199, fig. 119; Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 199, fig. 119.—Schuchert, Amer. Geol., 31, 1903, p. 166.—Grabau, Bull. New York State Mus., 69, 1903, p. 1043, fig. 7; ibid., 92, 1906,

Spirifer (Delthyris) eriensis—Continued.
p. 109, fig. 11.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 320, fig. 404.—Grabau, Michigan Geol. Surv., Geol. Ser., 1, 1906, p. 133, pl. 31, figs. 2 a, b.—Maynard, Maryland Geol. Surv., Low. Dev., 1913, p. 404, pl. 69, fig. 7.
Cayugan (Cobleskill and Rondout): Williamsville, North Buffalo, etc., New York.
Helderbergian (Keyser): Cash Valley, Maryland; New York; New Jersey.

Spirifer (Eospirifer) eudora (Hall).
Spirifera eudora Hall, Ann. Rep. Geol. Surv. Wisconsin, 1861, p. 25; Geol. Rep. Wisconsin, 1, 1863, p. 69, pl. 5; p. 436; Trans. Albany Inst., 4, 1863, p. 211; 20th Rep. New York State Cab. Nat. Hist., 1867, p. 370, pl. 13, figs. 5, 7; ibid., 28th Rep., 1879, p. 156, pl. 24, figs. 13–18; 11th Rep. State Geol. Indiana, 1882, p. 294, pl. 24, figs. 13–18; 2d Ann. Rep. New York State Geol. 1883, pl. 51, figs. 19–21, 29.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1010, figs.
Spirifer eudora Hall and Clarke, Pal. New York, 8, pt. 2, 1893, pp. 13, 35, pl. 21, figs. 19–21, 29.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 318, fig. 399.—Foerste, Cincinnati Soc. Nat. Hist. Jour., 21, 1909, p. 16, pl. 2, fig. 14 A, B.
Niagaran: Racine, Wisconsin (Racine); Waldron, Indiana; Newsom, Tennessee (Waldron); Louisville, Kentucky (Louisville); West Union, Ohio (West Union); Osgood, Indiana (Osgood).

Spirifer (Delthyris) exiguus (Foerste).
Spirifer exiguus Foerste, Cincinnati Soc. Nat. Hist. Jour., 21, 1909, p. 17, pl. 1, figs. 8 A, B, C.
Cayugan (Kokomo): Kokomo, Indiana.

Spirifer (Eospirifer) foggi (Nettelroth).
Spirifera foggi Nettelroth, Kentucky Fossil Shells, Mem. Kentucky Geol. Surv., 1889, p. 117, pl. 32, figs. 28–31.
Spirifer foggi Foerste, Jour. Geol., 11, 1903, p. 710 (loc. occ.).—Kindle and Breger, 28th Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1904, p. 441, pl. 8, figs. 24, 25.
Niagaran: Louisville, Kentucky (Louisville); Pegram, etc., Tennessee (Brownsport); Georgetown, Indiana.
Holotype.—Cat. No. 51317, U.S.N.M.

Spirifer (Eospirifer?) geronticus (Foerste).
Spirifer geronticus Foerste, Jour. Geol., 11, 1903, p. 710, Bull. Sci. Lab. Denison Univ., 14, 1909, p. 92, pl. 2, figs. 30 A, B.
Niagaran (Brownsport): Dixon Spring, Pegram, Clifton, etc., Tennessee.

Spirifer (Eospirifer) gibbosus (Hall).
Spirifer gibbosus Hall, Ann. Rep. Geol. Surv. Wisconsin, 1861, p. 25.
Spirifera gibbosa Hall, 20th Rep. New York State Cab. Nat. Hist., 1867, p. 370, pl. 13, figs. 6, 8.
Niagaran (Racine): Racine, Wisconsin.

Spirifer (Eospirifer) harinensis (Foerste).
Spirifer harinensis Foerste, Cincinnati Soc. Nat. Hist. Jour., 21, 1909, p. 16, pl. 2, figs. 2 A, B.
Clinton (West Union): Harin Hill, Lewis County, Kentucky.

SPIRIFER INÆQUIVALVIS Castelnau. See Rhynchotrema inæquivalve.

SPIRIFER INCONSTANS Hall. See Spirifer (Eospirifer) nobilis.

SPIRIFER LIRATUS Sowerby. See Stricklandinia lirata.

SPIRIFER MACROPLEURUS Safford. See Spirifer (Eospirifer) niagarensis oligoptychus.

Spirifer (Delthyris) modestus (Hall).

Spirifer modestus Hall, 10th Rep. New York State Cab. Nat. Hist., 1857, p. 61; Pal. New York, 3, 1859, p. 2, 3, pl. 28, figs. 1 a–e.—Hall and Clarke, Pal. New York, 8, pt. 2, 1893, p. 37, pl. 38, figs. 1, 3.—Grabau, Michigan Geol. Surv. Geol. Ser., 1, 1909, p. 137, pl. 16, figs. 11, 12, 24, 25.—Maynard, Maryland Geol. Surv., Low. Dev., 1913, p. 399, pl. 68, figs. 17–22.

Reticularia modestus Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 343.

Helderbergian (Keyser): Cumberland, Pinto, Cash Valley, Tonoloway, etc., Maryland; Hyndman, Pennsylvania; Keyser, West Virginia.

Upper Monroan (Lucas): Salt shaft, Detroit, Michigan.

SPIRIFER MODESTUS CORALLINENSIS Schuchert. See Spirifer (Delthyris) corallinensis.

Spirifer (Delthyris) modestus plicatus (Maynard).

Spirifer modestus var. plicatus Maynard, Maryland Geol. Surv., Low. Dev., 1913, p. 400, pl. 68, figs. 23, 24.

Helderbergian (Keyser): Keyser, West Virginia.

Spirifer (Delthyris) modestus striatissimus Holtedahl.

Spirifer modestus striatissimus Holtedahl, 2d Arct. Exp. "Fram," 1898–1902, No. 32, 1914, p. 26, pl. 8, fig. 2.

Helderbergian (Lower beds): Southwestern Ellesmereland, Arctic America.

Spirifer (Delthyris) nanus (Foerste).

Spirifer nanus Foerste, Cincinnati Soc. Nat. Hist. Jour., 21, 1909, p. 15, pl. 1, fig. 7; pl. 2, fig. 7.

Clinton (West Union): Big Salt Lick Creek, Lewis County, Kentucky; West Union, Adams County, Ohio.

Spirifer (Eospirifer) niagarensis (Conrad).

Delthyris niagarensis Conrad, Jour. Acad. Nat. Sci. Philadelphia, 8, 1842, p. 261.—Hall, Geol. New York, Rep. 4th Dist., 1843, p. 105, fig. 1.—Owen, Amer. Jour. Sci. Arts, 48, 1845, p. 313, fig. 1.

Spirifer niagarensis Hall, Pal. New York, 2, 1852, p. 264, pl. 54, fig. 5.—Emmons, Man. Geol., 1860, p. 109, fig. 99.—Chapman, Canadian Jour., n. s., 7, 1862, p. 113, fig. 98; ibid., 8, 1863, p. 212, fig. 219; Expos. Min. Geol. Canada, 1864, p. 116, fig. 98; p. 184, fig. 219.—Safford, Geol. Tennessee, 1869, p. 315, fig. 1, 2.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1024, figs.—Hall and Clarke, Pal. New York, 8, pt. 2, 1893, pp. 14–35, pl. 21, figs. 1–4, 25; pl. 37, fig. 1.—Grabau, Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 198, fig. 117; Bull. New York State Mus., 45, 1901, p. 298, fig. 117.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 319, fig. 400.

Spirifera niagarensis Billings, Canadian Nat. Geol., 1, 1856, p. 137, pl. 2, fig. 8; Geol. Canada, 1863, p. 317, fig. 329.—Hall, 2d Ann. Rep. New York State Geol., 1883, pl. 51, figs. 1–4, 25.

Clinton: Lockport, Rochester, etc., New York; Ontario (Rochester); Osgood, Indiana (Osgood).

Spirifer (Eospirifer) niagarensis oligoptychus (Roemer).

Spirifera niagarensis var. oligoptychus Roemer, Sil. Fauna West. Tennessee, 1860, p. 68, pl. 5, fig. 8.

Spirifer (Eospirifer) niagarensis oligoptychus—Continued.

Spirifer macropleurus Safford, Geol. Tennessee, 1869, p. 321.

Spirifer oligoptychus Foerste, Jour. Geol., 11, 1903, p. 710.

Niagaran (Brownsport): Decatur County, Tennessee.

Spirifer (Eospirifer) nobilis (Barrande).

Spirifer nobilis Barrande, Ueber die Brach. der Sil. Schicht von Böhmen, 1847.—Hall and Clarke, Pal. New York, 8, pt. 2, 1893, pp. 14, 35, pl. 29, fig. 16; pl. 37, figs. 2, 3.—Kindle and Breger, 28th Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1904, p. 441, pl. 9, figs.

Spirifer racinensis McChesney, New Pal. Fossils, 1861, p. 84; Plates, 1865, pl. 8, figs. 3–3b.

Spirifer inconstans Hall, Ann. Rep. Geol. Surv. Wisconsin, 1861, p. 26; Geol. Rep. Wisconsin, 1, 1862, p. 69, fig. 6; p. 436.

Spirifera nobilis Hall, 20th Rep. New York State Cab. Nat. Hist., 1867, p. 37 pl. 13, figs. 14–16.—Chamberlin, Geol. Wisconsin, 1, 1883, p. 192, fig.

Spirifera racinensis McChesney, New Pal. Fossils, 1868, p. 84.

Niagaran: Racine, Wisconsin; Chicago, Illinois (Racine); Pendleton, Georgetown, etc., Indiana.

Spirifer (Delthyris) octocostatus (Hall).

Spirifer octocostatus Hall, 10th Ann. Rep. New York State Cab. Nat. Hist., 185 p. 62; Pal. New York, 3, 1859, p. 205, pl. 28, figs. 4a–e.—Maynard, Marylan Geol. Surv., Low. Dev., 1913, p. 401, pl. 68, figs. 25–29.

Helderbergian (Keyser): Devil's Backbone, Cash Valley, Cumberland, etc Maryland; Hyndman, Pennsylvania; Keyser, West Virginia.

Spirifer (Delthyris) ohioensis (Grabau).

Spirifer vanuxemi Whitfield (not Hall), Ann. New York Acad. Sci., 5, 1891, 509, pl. 5, figs. 4, 5; Geol. Ohio, 7, 1893, p. 141, pl. 1, figs. 4, 5.

Spirifer ohioensis Grabau, Michigan Geol. Surv., Geol. Ser., 1, 1909, p. 134, pl. 1 figs. 1–3; pl. 29, figs. 4, 5.

Lower Monroan (Put-in-Bay): Put-in-Bay Island, Lake Erie.

SPIRIFER OLIGOPTYCHUS Foerste. See Spirifer (Eospirifer) niagarensis oligoptychus.

SPIRIFER PETILUS Grabau. See Reticularia bicostata petila.

SPIRIFER PLICATELLA var. RADIATA Sowerby. See Spirifer (Eospirifer) radiatus.

SPIRIFER PYRAMIDALIS Hall. See Cyrtina pyramidalis.

SPIRIFER RACINENSIS McChesney. See Spirifer (Eospirifer) nobilis.

Spirifer (Eospirifer) radiatus (Sowerby).

Spirifer plicatella var. radiata Sowerby, Min. Conch., 5, 1825, p. 493, figs. 1, 2.

Delthyris bialveata Conrad, Jour. Acad. Nat. Sci. Philadelphia, 8, 1842, p. 2 pl. 14, fig. 17.

Delthyris radiata Hall, Geol. New York, Rep. 4th Dist., 1843, p. 105, fig. 2 Owen, Amer. Jour. Sci., 48, 1845, p. 313, figs. 2, 2b.

Spirifer radiata Hall, Pal. New York, 2, 1852; pp. 66, 265, pl. 22, figs. 2d–25 (2a–2c=Crytia meta); pl. 54, fig. 6.

Spirifera radiata Billings, Canadian Nat. Geol., 1, 1856, p. 135, pl. 2, figs. 2, Geol. Canada, 1863, p. 317, fig. 328.—Winchell and Marcy, Mem. Boston S Nat. Hist., 1, 1865, p. 94.—Hall and Whitfield, 27th Rep. New York St Cab. Nat. Hist., 1875, pl. 9, figs. 17, 18.—Hall, 28th Rep., ibid., 1879, p. 1 pl. 24, figs. 20–30.—White, 2d Ann. Rep. Indiana Bu. of Stat. Geol., 18 p. 497, pl. 3, figs. 5, 6; 10th Rep. State Geol. Indiana, 1881, p. 129, pl. 3, f

Spirifer (Eospirifer) radiatus—Continued.

5, 6.—Hall, 11th Rep., ibid., 1882, p. 296, pl. 24, figs. 20–30.—Whitfield, Geol. Wisconsin, 4, 1882, p. 287, pl. 17, figs. 1, 2.—Hall, 2d Ann. Rep. New York State Geol., 1883, pl. 51, figs. 9–13, 26 (?14–17).—Nettelroth, Kentucky Fossil Shells, Mem. Kentucky Geol. Surv., 1889, p. 130, pl. 29, figs. 13–16.—Foerste, Proc. Boston Soc. Nat. Hist., 24, 1890, p. 313, pl. 5, fig. 6.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1028, figs.

Spirifer tenuistriatus Shaler (not Hall), Bull. Mus. Com. Zool., 4, 1865, p. 70.

Spirifera plicatella Billings, Cat. Sil. Fossils of Anticosti, 1866, p. 48.

Spirifera plicatella var. radiata Hall, 20th Rep. New York State Cab. Nat. Hist., 1867, p. 371, pl. 13, figs. 9–11.

Spirifer radiatus Emmons, Man. Geol., 1860, p. 109, fig. 99.—Chapman, Canadian Jour., n. s., 8, 1863, p. 212, fig. 220; Expos. Min. Geol. Canada, 1864, p. 116; p. 184, fig. 220.—Beecher and Clarke, Mem. New York State Mus., 1, 1889, p. p. 77, pl. 6, figs. 9–11.—Hall and Clarke, Pal. New York, 8, pt. 2, 1893, pp. 13, 35, pl. 21, figs. 5, 9–13, 26 (14–18).—Grabau, Bull. New York State Mus., 45, 1901, p. 198, fig. 116; Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 198, fig. 116.—Kindle and Breger, 28th Rep. Dep. Geol. Nat. Res. Indiana, 1904, p. 442, pl. 8, figs. 19–23.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 318, figs. 397, 398.—Foerste, Cincinnati Soc. Nat. Hist. Jour., 21, 1909, p. 14, pl. 2, fig. 8.

Middle Silurian: Europe; New York; Ontario; New Brunswick; Indiana; Kentucky; Tennessee; Wisconsin; etc. (Clinton and Niagaran).

Plesiotype.—Cat. No. 53218, U.S.N.M. (Nettelroth).

Spirifer (Eospirifer) radiatus obsoletus (Foerste).

Spirifer radiatus-obsoletus Foerste, Cincinnati Soc. Nat. Hist., 21, 1909, p. 14, pl. 2, fig. 10.

Clinton (West Union): Big Salt Lick Creek, Lewis County, Kentucky.

Spirifer (Eospirifer?) repertus (Foerste).

Spirifer repertus Foerste, Cincinnati Soc. Nat. Hist. Jour., 21, 1909, p. 16, pl. 1, figs. 14A, B; pl. 2, fig. 5.

Clinton (West Union): Harin Hill, Lewis County, Kentucky; West Union, Ohio.

Spirifer (Eospirifer) rostellum (Hall and Whitfield).

Spirifera rostellum Hall and Whitfield, 24th Rep. New York State Cab. Nat. Hist., 1872, p. 182.—Hall, 27th Rep. ibid., 1875, pl. 9, figs. 11–13.

Spirifer rostellum Nettelroth, Kentucky Fossil Shells, Mem. Kentucky Geol. Surv., 1889, p. 129, pl. 29, fig. 25; pl. 27, figs. 17–19.

Spirifera (Cyrtia) rostellum Foerste, Proc. Boston Soc. Nat. Hist., 24, 1890, p. 313, pl. 5, fig. 5.

Niagaran: Louisville, Kentucky (Louisville); Collinsville, Alabama.

Plesiotypes.—Cat. No. 51318, U.S.N.M. (Nettelroth).

Spirifer (Delthyris?) rugicosta (Hall).

Spirifera rugæcosta Hall, Canadian Nat. Geol., 5, 1860, p. 145.—Dawson, Acadian Geol., 3d ed., 1878, p. 596.

Delthyris(?) rugicosta Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 208.

Silurian (Stonehouse): Arisaig, Nova Scotia.

Spirifer (Delthyris) saffordi (Hall).

Spirifer saffordi Hall, Pal. New York, 3, 1859, p. 203, pl. 28, fig. 2.—Foerste, Jour. Geol., 11, 1903, p. 710.

Niagaran (Brownsport): Decatur County, Tennessee.

SPIRIFER SHEPPARDI Castelnau. See Platystrophia acutilirata.

Spirifer? similior (Winchell and Marcy).
Spirifera (Martinia) similior Winchell and Marcy, Mem. Boston Soc. Nat. Hist., 1, 1865, p. 93.
Pentamerus similior Hall, 20th Rep. New York State Cab. Nat. Hist., 1868, p. 397.
Niagaran (Racine): Bridgeport, Illinois.

SPIRIFER STAMINEA Emmons. See Spirifer (Delthyris) crispus.

Spirifer (Delthyris) subsulcatus (Hall).
Spirifer subsulcata Hall (not Dalman, 1828), Canadian Nat. Geol., 5, 1860, p. 145.
Spirifera subsulcata Dawson, Acadian Geol., 3d ed., 1878, p. 597.—Miller, N. A. Geol. Pal., 1889, p. 376.
Silurian (Moydart, Stonehouse): Arisaig, Nova Scotia.

Spirifer (Delthyris) sulcatus (Hisinger).
Delthyris sulcata Hisinger, Petref. Sueccia, 1837, p. 73, pl. 21, fig. 8.—Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 208.
Spirifer sulcatus Hall, Amer. Jour. Sci., 20, 1849, p. 228; Pal. New York, 2, 1852, p. 261, pl. 54, fig. 2.—Marcou, Geol. Map United States and British Prov., etc., 1853, p. 27, pl. 2, fig. 4.—Billings, Canadian Nat. Geol., 1, 1856, p. 137, pl. 2, fig. 7.—Safford, Geol. Tennessee, 1869, p. 315, figs. 3, 4.—Hall, 2d Ann. Rep. New York State Geol., 1883, pl. 60, figs. 1–4.—Hall and Clarke, Pal. New York, 8, pt. 2, 1895, pl. 35, figs. 1–4.
Spirifer (Delthyris) sulcatus Grabau, Bull. New York State Mus., 45, 1901, p. 200, fig. 120; Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 200, fig. 120.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 319, fig. 401.
Spirifera sulcata Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 1031, fig.
Delthyris rugatina Conrad, Jour. Acad. Nat. Sci. Philadelphia, 8, 1842, p. 261.
Delthyris decemplicatus Hall, Geol. New York, Rep. 4th Dist., 1843, p. 106, fig. 4.—Owen, Amer. Jour. Sci. Arts, 48, 1845, p. 313, figs. 4, 4a.
Spirifer decemplicatus Emmons, Man. Geol., 1860, p. 109, fig. 99.
Spirifera decemplicata Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 1005, figs.
Middle Silurian: Europe; Lockport, Rochester, etc., New York; Hamilton, Ontario (Clinton).

Spirifer (Delthyris) sulcatus submersus (Grabau).
Spirifer sulcata mut. submersa Grabau, Michigan Geol. Surv., Geol. Ser., 1, 1909, p. 136, pl. 18, figs. 4–6.
Upper Monroan (Amherstburg): Detroit River, opposite Amherstburg, Ontario.

Spirifer (Delthyris) swallowensis (Foerste).
Spirifer swallowensis Foerste, Jour. Geol., 11, 1903, p. 708; Bull. Sci. Lab. Denison Univ., 14, p. 93, pl. 2, fig. 33.
Niagaran (Waldron): Swallow Bluff, Tennessee.

SPIRIFER TENUISTRIATUS Shaler. See Spirifer (Eospirifer) radiatus.

SPIRIFER (CYRTIA) TRAPEZOIDALIS Hall and Whitfield. See Cyrtia exporrecta.

Spirifer trentonensis Emmons.
Spirifer trentonensis Emmons, Amer. Geology, 1, pt. 2, 1855, p. 235, pl. 15, fig. 20.
Spirifera trentonensis Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1031, fig.
Trenton: New York.
Observation.—Not recognizable without a restudy of the type specimen. *It's* Trenton species, probably a Platystrophia.

rifer (Delthyris) vanuxemi Hall.

Orthis plicata Vanuxem (not Sowerby), Geol. New York, Rep. 3d Dist., 1842, p. 112, fig. 1.—Mather, Nat. Hist. New York Geol., 1, 1843, p. 349, fig. 1.

Orthis (Delthyris) plicatus Hall, Geol. New York, 4th Dist., 1843, p. 142, fig. 1.

Delthyris plicatus Owen, Amer. Jour. Sci. Arts, 2d ser., 1, 1846, p. 47, fig. 1.

Spirifer vanuxemi Hall, Pal. New York, 3, 1859, p. 198, pl. 8, figs. 17–23; 2d Rep. New York State Geol., 1883, pl. 61, fig. 11.—Hall and Clarke, Pal. New York, 8, pt. 2, 1893, pp. 19, 36, pl. 36, fig. 11.—Whitfield, Geol. Ohio, 7, 1895, p. 411, pl. 1, figs. 4, 5.—Sherzer, Michigan Geol. Surv., 7, pt. 1, 1900, p. 223, pl. 17, figs. 4, 5.—Grabau, Bull. New York State Mus., 69, 1903, p. 1040, fig. 5.—Weller, Geol. Surv. New Jersey, Rep. Pal., 3, 1903, p. 262, pl. 24, figs. 9–12.—Shimer, Bull. New York State Mus., 80, 1905, p. 246.—Grabau, ibid., 92, 1906, p. 114, fig. 24.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 320, fig. 403.—Maynard, Maryland Geol. Surv., Low. Dev., 1913, p. 403, pl. 68, figs. 32, 33.

Spirifera vanuxemi Whitfield, Ann. New York Acad. Sci., 5, 1891, p. 509, pl. 5, figs. 4, 5.—Lesley, Geol. Surv. Pennsylvania Rep., P 4, 1889, p. 1032, fig.

Cayugan (Manlius): Albany and Schoharie County, New York; New Jersey; etc.

Helderbergian (Keyser): Devil's Backbone, Cash Valley, etc., Maryland; Pennsylvania; etc.

IFER VANUXEMI Whitfield. See Spirifer (Delthyris) ohioensis.

rifer (Delthyris) vanuxemi minor (Weller).

Spirifer vanuxemi var. minor Weller, Geol. Surv. New Jersey, Pal., 3, 1903, p. 238, pl. 21, figs. 41, 42.

Helderbergian (Decker Ferry): Two miles south of Tristates, New York.

rifer (Delthyris) vanuxemi prognosticus (Schuchert).

Spirifer vanuxemi var. prognosticus Schuchert and Maynard, Maryland Geol. Surv., Low. Dev., 1913, p. 403, pl. 68, figs. 34 and 35; pl. 69, figs. 1–3.—Holtedahl, Second Arct. Exp. "Fram," 1898–1902, No. 32, 1914, p. 27, pl. 8, fig. 4.

Helderbergian: Pinto, near Rawlings and Tonoloway, Maryland (Keyser); Southwestern Ellesmereland, Arctic America.

IFER VENTRICOSA Hall. See Nucleospira ventricosa.

IFERA of authors. See Spirifer Sowerby.

IFERA DECEMPLICATA Lesley. See Spirifer (Delthyris) sulcatus.

IFERA META Hall. See Cyrtia meta.

IFERA PLICATELLA Billings. See Spirifer (Eospirifer) radiatus.

IFERA PLICATELLA var. RADIATA Hall. See Spirifer (Eospirifer) radiatus.

IFERA(?) WALDRONENSIS Miller and Dyer. See Mimulus waldronensis.

IGERA D'Orbigny. See Athyris McCoy.

ROPHYTON Kayser. See Taonurus Fisher.

ROPHYTON ARCHIMEDES Ringueberg. See Dædalus archimedes.

RORBIS Lamarck. Genotype: Serpula spirorbis Linnæus.

Spirorbis Lamarck, An. sans Vert., 1801, p. 326.—Steininger, Mem. Soc. Geol. France, 1, 1834, p. 358.—McCoy, Syn. Char. Carb. Foss. Ireland, 1844, p. 169.—King, Mon. Permian Foss. England, Pal. Soc., 1850, p. 54.—Pictet, Traite de Pal., 2d ed., 2, 1854, p. 566.—McCoy, British Pal. Rocks Foss., 1854,

SPIRORBIS—Continued.

p. 131.—Chapman, Expos. Min. Geol. Canada, 1864, p. 132.—Nicholson, Rep. Pal. Proc. Ontario, pt. 1, 1874, p. 121.—Zittel, Handb. Pal., 1, 1879, p. 564.—Etheridge, Geol. Mag., dec. 2, 7, 1880, pp. 110, 171, 215.—Vine, Quart. Jour. Geol. Soc. London, 38, 1882, p. 378.—Waagen, Mem. Geol. Surv. India, Pal. Indica, 13th ser., 1, 1885, p. 814.—Miller, N. A. Geol. Pal., 1889, p. 521.—Grabau, Bull. Buffalo Soc. Nat. Sci., 6, 1899, p. 148.—Hinde, Zittel-Eastman Textb. Pal., 1, 1900, p. 253; 2d ed., 1913, p. 138.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 235.

Spirorbis cincinnatiensis Miller and Dyer.

Spirorbis cincinnatiensis Miller and Dyer, Jour. Cincinnati Soc. Nat. Hist., 1, 1878, p. 38, pl. 1, fig. 13.—Hall, Pal. New York, 7, Sup., 1888, p. 17, pl. 115, figs. 1, 2.

Maysville: Cincinnati, Ohio, and vicinity.

Observation.—Probably based on young coiled specimens of Cornulites.

Spirorbis? flexuosus Hall.

Spirorbis? flexuosus Hall, Trans. Albany Inst., 4, 1863, p. 224.

Niagaran (Waldron): Waldron, Indiana.

Observation.—Probably a young coiled specimen of Cornulites.

Spirorbis inornatus Hall.

Spirorbis inornatus Hall, Trans. Albany Inst., 4, 1863, p. 224; 28th Rep. New York State Mus. Nat. Hist., doc. ed., 1875, pl. 31, figs. 14, 15; mus. ed., 1879, p. 181, pl. 31, figs. 14, 15; 11th Ann. Rep. Indiana Dept. Geol. Nat. Hist., 1882, p. 327, pl. 32, figs. 14, 15.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1040, figs.

Niagaran (Waldron): Waldron, Indiana; Newsom, Tennessee.

Spirorbis laxus Hall.

Spirorbis laxus Hall, Pal. New York, 3, 1859, p. 349, pl. 54, figs. 18a-18c.—Nicholson, Rep. Pal. Prov. Ontario, pt. 2, 1875, p. 84, figs. 44a, b.—Sherzer, Geol. Surv. Michigan, 7, pt. 1, 1900, p. 225.—Grabau, Michigan Geol. Surv., Geol. Ser., 1, 1909, p. 201, pl. 15, fig. 12.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 235, fig. 1517.

Cayugan (Manlius): Schoharie, New York.

Lower Monroan (Raisin River): Monroe County, Michigan.

Spirorbis? lovelandensis James.

Spirorbis? Lovelandensis James, Paleontologist, No. 1, 1878, p. 7.

Maysville: Loveland, Clermont County, Ohio.

Observation.—Probably based on young specimen of Cornulites.

Spirula mortoni Troost. Not recognized.

Spirula Mortoni Troost, 5th Geol. Rep. Tennessee, 1840, p. 51; ibid., 6th Rep., 1841, p. 179.

Niagaran(?): Perry County, Tennessee.

SPONGIA INCISO-LOBATA Roemer. See Carpomanon incisolobatum.

SPONGIA STELLATIM-SULCATA Roemer. See Carpomanon stellatimsulcatum.

SPYROCERAS Hyatt. Genotype: Orthoceras crotalum Hall.

Spyroceras Hyatt, Proc. Boston Soc. Nat. Hist., 22, 1884, p. 276; Zittel-Eastman Textb. Pal., 1, 1900, p. 519; 2d ed., 1913, p. 600.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 63.

Spyroceras anellus (Conrad).

Orthoceras anellus Conrad, Proc. Acad. Nat. Sci. Philadelphia, 1, 1843, p. 334.—Hall, Pal. New York, 1, 1847, p. 202, pl. 43, figs. 6a–f.—Emmons, Amer. Geol,, 1, pt. 2, 1855, p. 150.—Hitchcock, Geol. Vermont, 1, for 1861, 1862, p. 298, fig. 209.—Meek and Worthen, Geol. Surv. Illinois, 3, p. 318, pl. 3, fig. 3.—Whitfield, Geol. Wisconsin, 4, 1882, p. 226, pl. 7, fig. 13.—James, J. F., Jour. Cincinnati Soc. Nat. Hist., 8, 1886, p. 239.—Clarke, Geol. Minnesota, 2, 1897, p. 784, pl. 47, figs. 22, 23.—Whiteaves, Pal. Foss. Geol. Surv. Canada, 3, pt. 3, 1897, p. 213.

Spyroceras cf. anellus Ruedemann, Bull. New York State Mus., 49, 1901, p. 39.

Spyroceras anellus Whiteaves, Geol. Surv. Canada Pal. Foss., 3, pt. 4, 1906, p. 344 (gen. ref.).—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 63, fig. 1270.

Mohawkian: Mineral Point, Wisconsin; Minnesota; Iowa; Missouri; Canada (Black River); Middleville, New York (Trenton).

Spyroceras balteatum (Billings).

Orthoceras balteatum Billings, Geol. Surv. Canada, Rep. Progr. for 1853–1856, 1857, p. 318; Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 22 (loc. ref.).

Richmond (English Head and Charleton): English Head, etc., Anticosti.

Spyroceras beauportense (Whiteaves).

Orthoceras Beauportense Whiteaves, Ottawa Nat., 12, 1908, p. 118.

Spyroceras Beauportense Whiteaves, Geol. Surv. Canada, Pal. Foss., 3, pt. 4. 1906, p. 323, pl. 33, figs. 2, 2a.

Trenton: Beauport, near Quebec, Canada.

Spyroceras bilineatum (Hall).

Orthoceras bilineatum Hall, Pal. New York, 1 1847, p. 35, pl. 7, figs. 4, 4a; p. 200, pl. 43, figs. 2, 3.—Emmons, Amer. Geol., 1, pt. 2, 1855, p. 149.—Billings, Canadian Nat. Geol.; 1, 1856, p. 316, fig. 4; Canadian Nat. Geol., 4, 1859, p. 462 (loc. occ.).—Chapman, Canadian Jour., n. s., 8, 1863, p. 20, fig. 128; p. 200, fig. 193; Expos. Min. Geol. Canada, 1864, p. 128, fig. 128; p. 172, fig. 193.—Clarke, Geol. Minnesota, 3, pt. 2, 1897, p. 786, pl. 47, figs. 20, 21; pl. 54, figs. 6, 7.—Schuchert, Proc. U. S. Nat. Mus., 22, 1900, p. 169.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 1033, pl. 51, figs. 2, 2b.

Spyroceras bilineatum Ruedemann, Bull. New York State Mus., 49, 1901, p. 39; Bull. New York State Mus., 90, 1906, p. 449.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 63, fig. 1269.

Black River and Trenton: Middleville, etc., New York; Canada; Minnesota; Kentucky; Tennessee; Missouri; etc.

Spyroceras bilineatum frankfortense Foerste.

Orthoceras (Spyroceras) bilineatum-frankfortensis Foerste, Bull. Sci. Lab. Denison Univ., 16, 1910, p. 75, pl. 1, figs. 6a, b.

Trenton (Hermitage): South of Glenn Creek, near Frankfort, Kentucky.

Spyroceras clintoni (Miller).

Orthoceras subarcuatum Hall, Pal. New York, 1, 1847, p. 34, pl. 7, fig. 3 (lower part of drawing).—Billings, Canadian Nat. Geol., 4, 1859, p. 461.

Orthoceras clintoni Miller, Amer. Pal. Foss. (1st ed.), 1877, p. 244. (Proposed in place of O. subarcuatum preoccupied.)

Spyroceras clintoni Ruedemann, Bull. New York State Mus., 90, 1906, p. 445, pl. 14, fig. 4; pl. 16, figs. 4–7, text fig. 18.

Chazyan (Day Point-Valcour): Chazy, Valcour Islands, etc., New York; Isle La Motte, Vermont.

Spyroceras ferum (Billings).
Orthoceras ferum Billings, Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 18
p. 22.
Richmond (English Head): Anticosti.

Spyroceras jamesi (Hall and Whitfield).
Orthoceras Jamesi Hall and Whitfield, Geol. Surv. Ohio Pal., 2, 1875, p. 118,
5, fig. 13.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 551, fig.
Orthoceras (Spyroceras) jamesi Foerste, Proc. Boston Soc. Nat. Hist., 24,188
283, pl. 7, fig. 3; Geol. Surv. Ohio Pal., 7, 1893, p. 546, pl. 32, fig. 3.
Upper Medinan (Brassfield): Todds Fork, Clinton County, Ohio.

Spyroceras maro (Billings).
Orthoceras Maro Billings, Canadian Nat. Geol., 4, 1859, p. 461.
Chazyan (Mingan): Mingan Islands, Quebec.

Spyroceras meridionale Whiteaves.
Spyroceras meridionale Whiteaves, Geol. Surv. Canada, Pal. Foss., 3, pt. 4,
p. 281, pl. 30, fig. 9.
Niagaran: Stonewall, Manitoba.

Spyroceras subannulatum (D'Orbigny).
Cyrtoceras annulatum Hall (not Goldfuss), Pal. New York, 1, 1847, p. 194,
figs. 4a–d, 5.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 147.—Ch
Canadian Jour., n. s., 8, 1863, p. 22, fig. 132; p. 198, fig. 174; Expo
Geol. Canada, 1864, p. 130, fig. 132; p. 170, fig. 174.—Chamberlin, Ge
consin, 1, 1883, p. 158, fig.
Cyrtoceras subannulatum D'Orbigny, Prodr. Pal., 1, 1849, p. 1.
Spyroceras (Cyrtoceras) subannulatum Ruedemann, Bull. New York Stat
49, 1901, p. 40.
Trenton: Middleville, etc., New York.

SQUAMASTER Ringueberg. Genotype: S. echinatus Ring
Squamaster Ringueberg, Bull. Buffalo Soc. Nat. Sci., 5, 1886, p. 5.—Sch
Bull. U. S. Nat. Mus., 88, 1915, p. 249.

Squamaster echinatus Ringueberg.
Squamaster echinatus Ringueberg, Bull. Buffalo Soc. Nat. Sci., 5, 188
pl. 1, fig. 1.—Schuchert, Bull. U. S. Nat. Mus., 88, 1915, p. 249.
Clinton (Rochester): Lockport, New York; Grimsby, Ontario.

STAUROCEPHALITES Hinde. Genotype: S. niagarensis
Staurocephalites Hinde, Quart. Jour. Geol. Soc. London, 35, 1879, p. 383.–
N. A. Geol. Pal., 1889, p. 521.

Staurocephalites niagarensis Hinde.
Staurocephalites niagarensis Hinde, Quart. Jour. Geol. Soc. London, 35,
pl. 20, 1879, fig. 1.
Niagaran? (Cataract?): Toronto, Ontario.

STAUROCEPHALUS Barrande. Genotype: Trochurus speciosusy
Trochurus Beyrich, Ueber einige bohm. Tril., 1845, p. 81; ibid., 2, 1846,
Bell and Forbes, Burmeister's Org. Tril., London, Suppl. App., 1846, p
Beyrich, Neues Jahrb. Min., Geol., Pal., 1846, p. 120.—Hawle and
Abh. d. k. bohmischen Gesell., d. Wiss., 5 (extract), 1847, p. 137, pl
73.—Lindstrom, Kongl. Sven. Vet.-Akad. Handl., 34, No. 8, 1901, p
Reed, Quart. Jour. Geol. Soc. London, 58, 1902, p. 63.

STAUROCEPHALUS—Continued.

Staurocephalus Barrande, Prelim. Not. Syst. Sil. Boheme, 1846, p. 52; Neues Jahrb. Min., Geol., Pal., 1850, p. 779; Syst. Sil. du Centre Boheme, 1, 1852, p. 810.—McCoy, British Pal. Rocks and Fossils, 1854, p. 152.—Salter, Mem. Geol. Surv. United Kingdom, 1864, dec. 11, pl. 5; Mon. British Tril., Pal. Soc., 1865, p. 84.—Angelin, Pal. Scandinavica, 3d ed., Holmiae, 1878, p. 67.—Zittel, Handb. Pal., 2, 1885, p. 620.—Koken, Die Leitfossilien, Leipzig, 1896, p. 33, fig. 23, figs. 1, 1a.—Reed, Geol. Mag., dec. 4, 5, 1898, p. 212.—Raymond, Zittel-Eastman Textb. Pal., 2d ed., 1913, p. 725.

Staurocephalus murchisoni Barrande.

Staurocephalus Murchisoni Barrande, Not. Prel. Sil. Syst. Boheme, 1846, p. 53.—McCoy, British Pal. Rocks and Fossils, 1854, p. 153, pl. 1F, fig. 15.—Salter, Mem. Geol. Surv. United Kingdom, dec. 11, 1864, pl. 5, figs. 1-5; Mon. British Tril., Pal. Soc., 1865, p. 84, pl. 7, figs. 13-20 (cites bibliography); Cat. Camb. Sil. Foss., 1873, p. 50.—Roemer, Leth. geog., Leth. Pal., 1, Atlas, 1876, pl. 17, fig. 14.—Van Ingen, School of Mines Quart., 23, 1891, p. 35.—Reed, Quart. Jour. Geol. Soc. London, 52, 1896, p. 425.

Silurian: England; St. Clair Springs, Independence County, Arkansas (St. Clair).

Staurocephalus obsoletus Weller.

Staurocephalus obsoleta Weller, Bull. Chicago Acad. Sci., Nat. Hist. Surv., 4, pt. 2, 1907, p. 270, pl. 24, fig. 15.

Niagaran (Racine): Near Lemont, Illinois.

STAUROGRAPSUS Emmons. See Staurograptus Emmons.

STAUROGRAPTUS Emmons. Genotype: S. dichotomus Emmons.

Staurograpsus Emmons, Amer. Geology, 1, pt. 2, 1855, p. 108.

Staurograptus Miller, N. A. Geol. Pal., 1889, p. 203.—Elles and Wood, Mon. British Grapt., Pal. Soc., 1903, p. 38.—Ruedemann, Mem. New York State Mus., 7, pt. 1, 1904, pp. 612-614.—Grabau and Shimer, N. A. Index Fossils, 1, 1906, p. 27.

Staurograptus dichotomus Emmons.

Staurograpsus dichotomus Emmons, Amer. Geology, 1, 1855, 2, p. 109, pl. 1, fig. 21; Man. Geol., 1860, p. 87, fig. 69.

Staurograptus dichotomus Miller, N. A. Geol. Pal., 1889, p. 203, fig. 216.—Ruedemann, Bull. New York State Mus., 69, 1903, p. 939; Mem. New York State Mus., 7, pt. 1, 1904, pp. 614-617, pl. 2, figs. 1-20; fig. 34, p. 613.—Grabau and Shimer, N. A. Index Fossils, 1, 1906, p. 27, fig. 39.

Bryograptus kjerulfi Matthew, Trans. Roy. Soc. Canada, 1891, sect. 4, p. 35.

Bryograptus patens Matthew, Roy. Soc. Canada, Trans. and Proc., 10, 4, 1893, p. 17, figs. 1a, 1c, 1d; Trans. New York Acad. Sci., 14, 1895, p. 268, pl. 48, figs. 4, 4b.—Ruedemann, Bull. New York State Mus., 69, 1903, p. 938 (loc. occ.).

Bryograptus lentus Matthew, Trans. New York Acad. Sci., 14, 1895, p. 270, pl. 48, figs. 2a, 2b.

Clonograptus proximatus Matthew, Trans. New York Acad. Sci., 14, 1895, p. 265, pl. 48, figs. 1a-d.—Ruedemann, Bull. New York State Mus., 69, 1903, p. 938.

Staurograptus dichotomus var. apertus Ruedemann, Mem. New York State Mus., 7, 1904, pt. 1, p. 617, pl. 2, figs. 21-24.—Hahn, Ann. New York Acad. Sci., 22, 1912, p. 140.

Canadian (Dictyonema flabelliforme beds): Schaghticoke, and other localities in slate belt of Rensselaer and Washington Counties, New York (Schaghticoke); Navy Island, St. John, New Brunswick (Bretonian—Div. C 3c).

STAUROGRAPTUS DICHOTOMUS var. APERTUS Ruedemann. See Staurograptus dichotomus.

STEGANOBLASTUS Whiteaves. See Astrocystites Whiteaves.

STEGANOBLASTUS CANADENSIS Whiteaves. See Astrocystites ottawaensis.

STEGERHYNCHUS Foerste. See Camarotœchia subgenus Stegerhynchus.

STELIDIOCRINUS Angelin. Genotype: S. capitulum Angelin.
Stelidiocrinus Angelin, Icon. Crin. Suec., 1878, p. 21, pl. 17, figs. 5a-g.—Zittel, Handb. Pal., 1, 1879, pp. 345, 371.—Wachsmuth and Springer, Proc. Acad. Nat. Sci. Philadelphia, 1881, pp. 266–270 (Rev. Pal., pt. 2, pp. 92, 96); ibid., 1885, p. 324; Mem. Mus. Comp. Zool., Harvard, 20, 1897, p. 297.—Bather, Treatise on Zool. (Lankester), pt. 3, 1900, p. 161.—Wachsmuth, Zittel-Eastman Textb. Pal., 1, 1900, p. 148.—Zittel, Grundzüge Pal., 1, 1910, p. 163.—Springer, Zittel-Eastman Textb. Pal., 2d ed., 1913, p. 189.

Stelidiocrinus argutus (Walcott).
Glyptocrinus argutus Walcott, 35th Rep. New York State Mus. Nat. Hist., 1883, p. 207, pl. 17, fig. 9.—Miller, Jour. Cincinnati Soc. Nat. Hist., 6, 1883, p. 23
Stelidiocrinus argutus Wachsmuth and Springer, Proc. Acad. Nat. Sci. Philadelphia, 1885, p. 324 (Rev. Pal., pt. 3, sec. 1, p. 102); Mem. Mus. Comp. Zool., Harvard, 20, 1897, p. 280, pl. 24, fig. 6.
Trenton: Trenton Falls, New York.

STELIELLA Hinde. Genotype: S. billingsi Hinde.
Steliella Hinde, Canadian Rec. Sci., 3, 1889, p. 395.

Steliella billingsi Hinde.
Steliella Billingsi Hinde, Canadian Rec. Sci., 3, 1889, p. 396, pl., figs. 1-4.
Trenton: Ottawa, Ontario.

Steliella crassa Hinde.
Steliella crassa Hinde, Canadian Rec. Sci., 3, 1889, p. 397, pl., fig. 5-6.
Trenton: Ottawa, Ontario.

STELLIPORA Milne-Edwards. See Constellaria Dana.

STELLIPORA Hall. Genotype: S. antheloidea Hall.
Stellipora Hall, Pal. New York, 1, 1847, p. 79.—D'Orbigny, Prodr. de Pal., 1, 1850, p. 22.—Dybowski (part), Die Chætetiden d. Ostbaltischen Silur-Form., 1877, p. 42.—Ulrich, Jour. Cincinnati Soc. Nat. Hist., 5, p. 155; ibid., 6, 1883, 1882, p. 263.—Miller, N. A. Geol. Pal., 1889, p. 203.—Ulrich, Geol. Surv. Illinois, 8, 1890, p. 374; Zittel's Textb. Pal. (Engl. ed.), 1896, p. 276.—Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 34.—Bassler, Bull. U. S. Nat. Mus., 77, 1911, p. 221; Zittel-Eastman Textb. Pal., 1913, p. 334.

Stellipora antheloidea Hall.
Stellipora antheloidea Hall, Pal. New York, 1, 1847, p. 79, pl. 26, figs. 10a-c.—Emmons, Amer. Geology, 1, pt. 2, pl. 7, fig. 10.—Ulrich, Jour. Cincinnati Soc. Nat. Hist., 6, 1883, p. 263, pl. 14, figs. 1, 1a.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1047, figs.—Sardeson, Jour. Geol., 9, 1901, p. 13.
Monticulipora (Constellaria) antheloidea (in part) James and James, Jour. Cincinnati Soc. Nat. Hist., 11, p. 31.
Trenton: Lowville, etc., New York; Ottawa, Ontario.
Plesiotype.—Cat. No. 43710, U.S.N.M. (Ulrich).

STELLIPORA ANTHELOIDEA D'Orbigny. See Constellaria florida.

STELLIPORA LIMITARIS Ulrich. See Constellaria limitaris.

STELLIPORA POLYSTOMELLA Miller. See Constellaria polystomella.

STENASTER Billings. Genotype: S. salteri Billings.

Stenaster Billings, Geol. Surv. Canada, dec. 3, 1858, p. 77.—Chapman, Canadian Jour., n. s., 6, 1861, p. 517; Expos. Min. Geol. Canada, 1864, p. 111.—Miller, N. A. Geol. Pal., 1889, p. 282.—Sturtz, Palæontographica, 36, 1890, p. 220.—James, J. F., Jour. Cincinnati Soc. Nat. Hist., 18, 1895, pp. 126, 135.—Gregory, Geol. Mag., dec. 4, 6, 1899, p. 352.—Schuchert, Bull. U. S. Nat. Mus., 88, 1915, p. 163.

Urasterella Sturtz (not McCoy), Vern. naturh. Ver. preuss. Rheinl., etc., 50, 1893, pp. 40, 41, 56.

STENASTER Billings (part). See Urasterella McCoy.

Stenaster salteri Billings.

Stenaster Salteri Billings, Geol. Surv. Canada, dec. 3, 1858, p. 78, pl. 10, figs. 1a, 1b.—Chapman, Canadian Jour., n. s., 6, 1861, p. 517.—Wright, Mon. British Foss. Echinod., Oolitic, 2, pt. 1 (Pal. Soc.), 1862, p. 28, fig. 15 (2) on p. 24.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 572, fig. 1910.—Springer, Mem. Geol. Surv. Canada, 15 P, 1911, p. 45 (loc. occ.).—Schuchert, Bull. U. S. Nat. Mus., 88, 1915, p. 165, pl. 32, fig. 1.

Trenton (Curdsville): Belleville, Ottawa, and Kirkfield, Ontario; Curdsville, Kentucky.

STENOCHISMA Conrad. See Rhynchotrema Hall.

STENOCISMA Hall. See Zygospira Hall.

STENOCRINUS Wachsmuth and Springer. See Heterocrinus Hall.

STENOCRINUS BELLEVILLENSIS Wachsmuth and Springer. See Ohiocrinus bellevillensis.

STENOPORA Lonsdale. Genotype: S. tasmaniensis Lonsdale.

Stenopora Lonsdale, Darwin's Volcanic Islands, 1844, Appendix, p. 161; Strzelecki's Physical Description New South Wales, 1845, p. 262; Geol. Russia and Ural Mountains, 1, 1845, p. 631.—King, Mono. Perm. Foss. England, 1850, p. 28.—McCoy, British Pal. Foss., 1852, p. 24.—Eichwald, Lethaea Rossica, 1, 1860, p. 414.—Miller, Cincinnati Quart. Jour. Sci., 1, 1874, p. 368.—Dybowski, Verh. d. k. Min. Ges. St. Petersburg, ser. 2, 10, 1876, p. 180.—Nicholson and Etheridge, jr., Ann. Mag. Nat. Hist., ser. 5, 4, 1879, p. 265.—Nicholson, Pal. Tabulate Corals, 1879, p. 168.—Ulrich, Jour. Cincinnati Soc. Nat. Hist., 5, 1882, p. 154.—Nicholson and Etheridge, jr., Ann. Mag. Nat. Hist., ser. 5, 17, 1886, pp. 173–187.—Waagen and Wentzel, Pal. Indica, ser. 13, 1886, pp. 875, 885.—Foerste, Bull. Sci. Lab. Denison Univ., 2, 1887, p. 85.—Miller, N. A. Geol. Pal., 1889, p. 203.—Ulrich, Geol. Surv. Illinois, 8, 1890, pp. 375, 436; Zittel's Textb. Pal. (Engl. ed.), 1896, p. 105.—Ulrich, Zittel's Textb. Pal. (Engl. ed.), 1896, p. 277.—Simpson, 14th Ann. Rep. State Geol. New York for 1894, 1897, p. 583.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 134.—Bassler, Zittel-Eastman Textb. Pal., 2d ed., 1913, p. 335.

Tabulipora Young, Ann. Mag. Nat. Hist., ser. 5, 12, 1883, p. 154.

Tubuliclidia Lonsdale, Bull. Soc. Geol. France, ser. 2, 1, 1844, p. 497; Murchison's Geol. Russia, 1845, pp. 221, 631.

Stenopora adherens Billings. Not recognizable.
Stenopora adherens Billings, Canadian Nat. Geol., 4, 1859, p. 427.
Chazyan: Mingan Islands, Canada.

STENOPORA BULBOSA Billings. See Cyphotrypa bulbosa.

STENOPORA HURONENSIS Billings. See Stromatocerium huronense.

Stenopora fibrosa of authors (not Goldfuss).
Stenopora fibrosa Billings, Canadian Nat. Geol., 4, 1859, p. 346.—Chapman, Canadian Jour., n. s., 6, 1861, p. 509, fig. 73; ibid., 8, 1863, p. 195, fig. 165a; p. 198, fig. 177.—Billings, Geol. Canada, 1863, p. 156, fig. 116; Geol. Canada, Geol. Surv. Canada, 1863, p. 124, fig. 45.—Chapman, Expos. Min. Geol. Canada, 1864, p. 103, fig. 73; p. 167, fig. 165a; p. 170, fig. 177.—Billings, Catal. Sil. Foss. Anticosti, 1866, p. 32.—Miller, Cincinnati Quart. Jour. Sci., 1, 1874, p. 369.
Ordovician: Various localities.
Observation.—The above citations are to various unidentified ramose bryozoa.

Stenopora(?) incrustans Ulrich and Bassler.
Stenopora(?) incrustans Ulrich and Bassler, Maryland Geol. Surv., Low. Dev., 1913, p. 275, pl. 42, figs. 11–16; pl. 44, fig. 6.
Helderbergian (Keyser): Cash Valley and Pinto, Maryland.
Cotypes.—Cat. No. 53649, U.S.N.M.

STENOPORA LIBANA Safford. See Batostoma libana.

STENOPORA LYCOPERDON Miller. See Chætetes lycoperdon.

STENOPORA MAMMULATA Billings. See Ptilodictya magnifica.

Stenopora patula Billings. Not recognizable.
Stenopora patula Billings, Canadian Nat. Geol., 4, 1859, p. 427.
Chazyan: Island of Montreal and Mingan Islands, Canada.

STENOTHECA (Salter) Hicks. Genotype: S. cornucopia Salter.
Stenotheca (Salter) Hicks, Quart. Jour. Geol. Soc., 28, 1872, p. 180.—Salter, Cat. Camb. Sil. Foss., 1873, p. 8 (nom. nud.).—Geol. Mag., dec. 3, 2, 1885, p. 425.—Walcott, Bull. U. S. Geol. Surv., 30, 1886, p. 128.—Matthew, Trans. Royal Soc. Canada, 3, sec. 4, 1886, p. 56.—Miller, N. A. Geol. Pal., 1889, p. 392.—Matthew, Trans. Royal Soc. Canada, 8, sec. 4, 1891, p. 132; Trans. New York Acad. Sci., 15, 1896, p. 200.—Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, pp. 822, 842.—Berkey, Amer. Geol., 21, 1898, p. 278.—Pilsbry, Zittel-Eastman Textb. Pal., 1, 1900, p. 460.—Grabau, Occ. Papers Boston Soc. Nat. Hist., 4, 1900, p. 636.—Dall, Zittel-Eastman Textb. Pal., 2d ed., 1913, p. 530.

STENOTHECA DUBIA Whitfield and Hovey. See Archinacella deformata.

Stenotheca exserta (Sardeson).
Tryblidium exsertum Sardeson, Bull. Minnesota Acad. Nat. Sci., 3, 1892, p. 337, pl. 6, figs. 3, 4.
Stenotheca exserta Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 842, pl. 82, figs. 11–15.
Black River (Platteville): Minneapolis, Minnesota; Beloit, Wisconsin.

STENOTHECA UNGUIFORMIS Ulrich. See Vallatotheca unguiformis.

STEPHANELLA Hinde. Genotype: S. sancta Hinde.
Stephanella Hinde, Geol. Mag., dec. 3, 8, 1891, p. 23.—Dawson, Trans. Royal Soc. Canada, 2d ser., 2, sec. 4, 1896, p. 116.

Stephanella hindii Dawson.
Stephanella hindii Dawson, Trans. Royal Soc. Canada, 2d ser., 2, sec. 4, 1896, p. 116, fig. 27–29.
Canadian? (Levis?): Metis, Quebec.

Stephanella sancta Hinde.
Stephanella sancta Hinde, Geol. Mag., dec. 3, 8, 1891, p. 23, fig.
Trenton (Collingwood): Ottawa, Ontario.

STEPHANOCRINUS Conrad. Genotype: S. angulatus Conrad.
Stephanocrinus Conrad, Jour. Acad. Nat. Sci. Philadelphia, 8, 1842, p. 278.—Roemer, Archiv für Naturgeschichte, Jahrg., 16, 1, 1850, pp. 365, 366, 373.—Hall, Pal. New York, 2, 1852, pp. 212, 355.—Pictet, Traite de Pal., 2d ed., 4, 1857, p. 304.—Allman, Trans. Royal Soc. Edinburgh, 23, 1864, p. 248, fig. 4.—Beyrich, Ann. Mag. Nat. Hist., 4th ser., 7, 1871, p. 409.—Zittel, Handb. Pal., 1, 1879, p. 436.—Etheridge and Carpenter, Ann. Mag. Nat. Hist., 5th ser., 11, 1883, p. 237.—Wachsmuth and Springer, Proc. Acad. Nat. Sci. Philadelphia, 1887, pp. 92, 93, 96, 97, 98–113.—Miller, N. A. Geol. Pal., 1889, p. 283.—Bather, Treatise on Zool., pt. 3, Echinoderma, London, 1900, p. 145.—Weller, Bull. Chicago Acad. Sci. Nat. Hist. Surv., 4, pt. 1, 1900, p. 150, fig. 56; p. 46.—Wachsmuth, Zittel-Eastman Textb. Pal., 1, 1900, p. 137.—Grabau, Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 153; Bull. New York State Mus., 45, 1901, p. 153.—Slocom, Field Columbian Mus., 2, Geol. Ser., 1908, p. 281, fig. 4.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 499.—Springer, Zittel-Eastman Textb. Pal., 2d ed., 1913, p. 207.

Stephanocrinus angulatus Conrad.
Stephanocrinus angulatus Conrad, Jour. Acad. Nat. Sci. Philadelphia, 8, 1842, p. 279, pl. 15, fig. 18.—Roemer, Archiv fur Naturgeschichte, Jahrg., 16, 1, 1850, p. 365, footnote; pl. 5, figs. 1–6; Zeits. d. d. geol. Gesell., 2, 1850, p. 14.—Hall, Pal. New York, 2, 1852, p. 212, pl. 48, figs. 1a–m; p. 351, pl. 85, figs. 1–4.—Pictet, Traite de Pal., 2d ed., 4, 1857, p. 304, pl. 99, fig. 23.—Roemer, Leth. geog., 1, Leth. Pal., Atlas, 1876, pl. 11, fig. 5a.—Zittel, Handb. Pal., 1, 1879, p. 436, fig. 310.—Etheridge and Carpenter, Blastoidea British Mus., 1886, pl. 19, figs. 8–12.—Wachsmuth and Springer, Proc. Acad. Nat. Sci., Philadelphia, 1887, pp. 99, 113, pl. 4, fig. 3.—Miller, N. A. Geol. Pal., 1889, p. 283, text fig. 433.—Bather, Treatise on Zool., pt. 3, Echinoderma, London, 1900, p. 97, fig. 2.—Grabau, Bull. New York State Mus., 45, 1901, p. 154, fig. 48; Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 154, fig. 48.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 499, fig. 1808–1809.
Clinton (Rochester): Lockport, Rochester, etc., New York; Grimsby, Ontario.

Stephanocrinus cornetti Miller.
Stephanocrinus cornetti Miller, 18th Ann. Rep. Indiana Dep. Geol. Nat. Res., 1894, p. 266, pl. 2, figs. 10–12 (Adv. sheets, 1892, p. 12, pl. 2, figs. 10–12).
Clinton (Osgood): Madison, Indiana.

Stephanocrinus deformis Rowley.
Stephanocrinus deformis Rowley, in Greene's Cont. Indiana Pal., 11, 1903, p. 103, pl. 32, figs. 22, 23.
Clinton (Osgood): Big Creek, near Big Creek Post Office, Jefferson County, Indiana.

Stephanocrinus elongatus Miller.
Stephanocrinus elongatus Miller, 17th Ann. Rep. Indiana Dep. Geol. Nat. Res., 1892, p. 634, pl. 6, fig. 5 (adv. sheets, 1891, p. 24).
Clinton (Osgood): Near Madison, Indiana.

Stephanocrinus gemmiformis Hall.

Stephanocrinus gemmiformis Hall, Pal. New York, 2, 1852, p. 215, pl. 48, figs. 2a–i; 28th Rep. New York State Mus. Nat. Hist., doc. ed., 1877, pl. 14, figs. 15–20; mus. ed., 1879, p. 146, pl. 14, figs. 15–20; 11th Ann. Rep. Indiana Dep. Geol. Nat. Hist., 1882, p. 279, fig.; pl. 13, figs. 15, 20.—Chamberlin, Geol. Wisconsin, 1, 1883, p. 191, fig.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1062, figs.—Grabau, Bull. New York State Mus., 45, 1901, p. 155, fig. 49; Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 155, fig. 49.—Rowley, in Greene's Cont. Indiana Pal., 11, 1903, p. 104, pl. 32, figs. 24, 25.

Clinton (Rochester): Lockport, etc., New York; Grimsby, Ontario.

Niagaran: Waldron, Indiana; Newsom, Tennessee (Waldron); ?Wisconsin (Racine).

Stephanocrinus hammelli Miller.

Stephanocrinus hammelli Miller, 17th Ann. Rep. Indiana Dep. Geol. Nat. Res., 1892, p. 635, pl. 6, figs. 7, 8, 9 (Adv. sheets, 1891, p. 25); N. A. Geol. Pal., 2d App., 1897, p. 752, fig. 1395.—Rowley in Greene's Cont. Indiana Pal., 11, 1902, p. 104, pl. 32, figs. 28–30.

Clinton (Osgood): Near Big Creek Post Office, Jefferson County, Indiana.

Stephanocrinus obconicus Slocom.

Stephanocrinus obconicus Slocom, Field Columbian Mus., Geol. Ser., 2, 1908, p. 281, pl. 84, figs. 12, 13.

Niagaran (Racine): Romeo, Illinois.

Stephanocrinus obpyramidalis Miller.

Stephanocrinus obpyramidalis Miller, 17th Ann. Rep. Indiana Dep. Geol. Nat. Res., 1892, p. 634, pl. 6, fig. 6 (Adv. sheets, 1891, p. 24.).

Clinton (Osgood): Near Madison, Indiana.

Stephanocrinus osgoodensis Miller.

Stephanocrinus osgoodensis Miller, Jour. Cincinnati Soc. Nat. Hist., 2, 1879, p. 116, pl. 10, figs. 7, 7a; 17th Ann. Rep. Indiana Dep. Geol. Nat. Res., 1892, p. 632, pl. 6, figs. 1–4 (adv. sheets, 1891, p. 22); N. A. Geol. Pal., 2d App., 1897, p. 753, fig. 1396.—Weller, Bull. Chicago Acad. Sci. Nat. Hist. Surv., 4, pt. 1, 1900, p. 151, pl. 15, fig. 14.—Rowley, in Greene's Cont. Indiana Pal., 11, 1903, p. 104, pl. 32, figs. 26, 27.

Codaster osgoodensis Wachsmuth and Springer, Proc. Acad. Nat. Sci. Philadelphia, 1886, p. 217.

Clinton (Osgood): Osgood and Big Creek Post Office, Jefferson County, Indiana.

?Niagaran (Racine): Romeo, Illinois.

Stephanocrinus pentalobus (Hall).

Codaster pentalobus Hall, 11th Ann. Rep. Indiana Dep. Geol. Nat. Hist., 1882, p. 280, pl. 15, fig. 16.—Hall, Trans. Albany Inst., 10, 1883, p. 69.

Stephanocrinus pentalobus Miller, N. A. Geol. Pal., 1889, p. 283.

Niagaran (Waldron): Waldron, Indiana.

Stephanocrinus pulchellus (Miller and Dyer).

Codaster pulchellus Miller and Dyer, Jour. Cincinnati Soc. Nat. Hist., 1, 1878, p. 35, pl. 2, figs. 13, 13a.—Hambach, Trans. Acad. Sci., St. Louis, 13, 1903, p. 48.

Codaster (Stephanocrinus?) pulchellus Hall, 11th Ann. Rep. Indiana Dep. Geol. Nat. Hist., 1882, p. 280, pl. 15, figs. 8–10; Trans. Albany Inst., 10, 1883, p. 68.

Stephanocrinus pulchellus Etheridge and Carpenter, Ann. Mag. Nat. Hist., 5th ser., 11, 1883, p. 241 (gen. ref.).—Miller, N. A. Geol. Pal., 1889, p. 283, fig. 434.

Niagaran (Waldron): Waldron, Indiana.

Stephanocrinus quinquepartitus Rowley.

Stephanocrinus quinquepartitus Rowley in Greene's Cont. Indiana Pal., 11, 1903, p. 105, pl. 32, figs. 31-33.

Clinton (Osgood): Big Creek, near Big Creek Post Office, Jefferson County, Indiana.

Stephanocrinus skiffi Slocom.

Stephanocrinus skiffi Slocum, Field Columbian Mus., Geol. Ser., 2, 1908, p. 282, pl. 84, figs. 16-20.

Niagaran (Racine): Chicago Drainage Canal, near Lemont, Illinois.

Stephanocrinus tennesseensis Foerste.

Stephanocrinus tennesseensis Foerste, Jour. Geol., 11, 1903, p. 708; Bull. Sci. Lab. Denison Univ., 14, 1909, p. 99, pl. 1, fig. 4A, B.

Niagaran (Waldron): Iron City, Clifton, Swallow Bluff, etc., Tennessee.

STEPHANOGRAPTUS Geinitz. See Nemagraptus Emmons.

STEPHANOGRAPTUS CRASSICAULIS Gurley. See Nemagraptus gracilis crassicaulis.

STEPHANOCRINUS SURCULARIS Walcott. See Nemagraptus gracilis surcularis.

STICTOPORA Hall. Genotype: S. elegantula Hall.

Stictopora Hall, Pal. New York, 1, 1847, p. 73.—Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, pp. 47, 411.

Stictopora (in part) Hall, 28th Ann. Rep. New York State Mus., 1879, p. 122; 11th Ann. Rep. Indiana Geol. Nat. Hist., 1882, p. 247.—Miller, N. A. Geol. Pal., 1889, p. 323.—Simpson, 14th Ann. Rep. State Geol. New York for 1894, 1897, p. 605.

Not Stictopora Eichwald, Ulrich, Hall and Simpson, and others.

STICTOPORA Ulrich (1882). See Rhinidictya Ulrich.

STICTOPORA ACUTA Ulrich. See Pachydictya acuta.

STICTOPORA BASALIS Ulrich. See Rhinidictya basalis.

STICTOPORA BIFURCATA Hall. See Pachydictya bifurcata.

STICTOPORA CLATHRATULA James. See Escharopora pavonia.

STICTOPORA COMPRESSA Hall. See Phænopora magna.

STICTOPORA CRASSA Hall. See Pachydictya crassa.

STICTOPORA DICHOTOMA Whitfield. See Thamniscus dichotomus.

Stictopora elegantula Hall.

Stictopora elegantula Hall, Pal. New York, 1, 1847, p. 75, pl. 26, figs. 4a-g.—Chamberlin, Geol. Wisconsin, 1, 1883, p. 153, fig.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1064, figs.—Ruedemann, Bull. New York State Mus., 49, 1901, p. 13.

Ptilodictya elegantula Emmons, Amer. Geology, 1, pt. 2, 1855, p. 205, pl. 7, fig. 4a-g.

Trenton: Middleville, Trenton Falls, etc., New York.

STICTOPORA FENESTRATA Hall. See Rhinidictya fenestrata.

STICTOPORA FIDELIS Ulrich. See Rhinidictya fidelis and R. trentonensis.

STICTOPORA FRAGILIS Whitfield. See Dicranopora fragilis.

Stictopora? glomerata Hall.

Stictopora glomerata Hall, Pal. New York, 1, 1847, p. 17, pl. 4, fig. 5.

Clathropora glomerata Whitfield and Hovey, Bull. Amer. Mus. Nat. Hist., 11, pt. 1, 1898, p. 26 (gen. ref.).

Chazyan: Granville, Vermont.

Stictopora graminifolia Ringueberg. Recognizable?

Stictopora graminifolia Ringueberg, Proc. Acad. Nat. Sci. Philadelphia, 1884, p. 147, pl. 2, fig. 4.

Niagaran (Lockport—Gasport member): Gasport, New York.

Stictopora? (Phyllodictya?) labyrinthica Hall.

Stictopora labyrinthica Hall, Pal. New York, 1, 1847, p. 50, pl. 12, figs. 8a, b, and woodcut on p. 50.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1067, figs.

Ptilodictya labyrinthica Emmons, Amer. Geology, 1, pt. 2, 1855, p. 205, pl. 4, figs. 14, 18, 22.

Black River: Chazy and Watertown, New York (Lowville).

Stictopora magna Hall and Whitfield. See Phænopora magna.

Stictopora multifida Hall. See Phænopora multifida.

Stictopora mutabilis Ulrich. See Rhinidictya mutabilis.

Stictopora mutabilis var. major. See Rhinidictya mutabilis major.

Stictopora mutabilis var. minor Ulrich. See Rhinidictya mutabilis.

Stictopora obliqua Ringueberg. See Ptilodictya obliqua.

Stictopora orbipora Hall. See Stictotrypa orbipora.

Stictopora ovatipora Miller. See Stictotrypa similis.

Stictopora paupera Ulrich. See Rhinidictya paupera and R. neglecta.

Stictopora punctipora Hall. See Stictotrypa punctipora.

Stictopora? ramosa Hall.

Stictopora ramosa Hall, Pal. New York, 1, 1847, p. 51, pl. 12, figs. 6, 7, 7a, and woodcut on p. 51.—Hitchcock, Geol. Vermont, 1, 1861, p. 290, fig. 189.—Emerson, Narrative Hall's Sec. Arctic Exped., U. S. Navy Dep., 1879, p. 577.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1069, figs.

Ptilodictya ramosa Emmons, Amer. Geology, 1, pt. 2, 1855, p. 205, pl. 4, fig. 1, 1a, 14; pl. 7, figs. 7, 7a.

Black River (Lowville): Watertown, New York.

Stictopora raripora Hall. See Nematopora raripora.

Stictopora scalpellum Eichwald. See Pachydictya bifurcata.

Stictopora scitula Hall and Simpson. See Pachydictya crassa.

Stictopora shafferi Lesley. See Arthropora shafferi.

Stictopora similis Hall. See Stictotrypa similis.

Stictopora vanclevii Hall. See Phænopora fimbriata.

STICTOPORELLA Ulrich. Genotype: S. interstincta Ulrich

Stictoporella Ulrich, Jour. Cincinnati Soc. Nat. Hist., 5, 1882, pp. 152, 169.—Miller, N. A. Geol. Pal., 1889, p. 325.—Ulrich, Geol. Surv. Illinois, 8, 1890, p. 394; Geol. Minnesota, 3, 1893, p. 179.—Pocta, Syst. Sil. Centre Boheme, 8, pt. 1, 1894, p. 14.—Ulrich, Zittel's Textb. Pal. (Engl. ed.), 1896, p. 279.—Simpson, 14th Ann. Rep. State Geol. New York for 1894, 1897, p. 535.—Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 46.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 157.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 756.—Bassler, Bull. U. S. Nat. Mus., 77, 1911, p. 127; Zittel-Eastman Textb. Pal., 1913, p. 345.

Micropora Eichwald (not Gray, 1848), Bull. Soc. Nat. Moscow, No. 4, 1855, p. 457; Lethæa Rossica, 1, 1860, p. 393.

Stictoporella angularis Ulrich.

Stictoporella angularis Ulrich, 14th Ann. Rep. Geol. Nat. Hist. Surv. Minnesota, 1886, p. 71; Geol. Minnesota, 3, 1893, p. 182, pl. 11, figs. 1–3, 6, 8–11.

Black River (Decorah): Minneapolis, St. Paul, Goodhue, and Fillmore Counties, Minnesota.

Cotypes.—Cat. No. 43470, U.S.N.M.

Stictoporella angularis intermedia Ulrich.

Stictoporella angularis var. intermedia Ulrich, Geol. Minnesota, 3, 1893, p. 183, pl. 11, figs. 4, 5, 7.

Black River (Decorah): Minneapolis, Fountain, Lanesboro, and Preston, Minnesota; Decorah, Iowa.

Cotypes.—Cat. No. 44101, U.S.N.M.

Stictoporella cribrosa Ulrich.

Stictoporella? cribrosa Ulrich, 11th Ann. Rep. Geol. Nat. Hist. Surv. Minnesota, 1886, p. 69; Geol. Minnesota, 3, 1893, p. 184, pl. 10, figs. 21–25, pl. 11, figs. 22, 23.—Simpson, 14th Ann. Rep. State Geol. New York for 1894, 1897, fig. 93 (p. 536).—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 157, fig. 208h.—Bassler, Bull. U. S. Nat. Mus., 77, 1911, pp. 128–130, pl. 7, fig. 4; figs. 52, 53; Zittel-Eastman Textb. Pal., 1913, p. 344, fig. 504c, d.

Black River (Decorah): Minneapolis and St. Paul, Minnesota.

Middle Ordovician (Wassalem): Uxnorm, etc., Esthonia, Russia.

Cotypes.—Cat. No. 43471, U.S.N.M.

STICTOPORELLA CRIBROSA Sardeson. See Graptodictya proava.

Stictoporella dumosa Ulrich.

Stictoporella dumosa Ulrich, Geol. Minnesota, 3, 1893, p. 181.

Black River (Decorah): St. Paul, Minnesota.

Cotypes.—Cat. No. 43613, U.S.N.M.

STICTOPORELLA? EXCELLENS Ulrich. See Phænopora excellens.

Stictoporella exigua Ulrich.

Stictoporella exigua Ulrich, Geol. Minnesota, 3, 1893, pl. 13, figs. 18–21.

Trenton: Montreal, Quebec.

Cotypes.—Cat. No. 43612, U.S.N.M.

STICTOPORELLA FLABELLATA Nickles and Bassler. See Graptodictya proava.

Stictoporella flexuosa (James).

Ptilodictya flexuosa James, Paleontologist, No. 1, 1878, p. 4.

Stictoporella flexuosa Ulrich, Jour. Cincinnati Soc. Nat. Hist., 5, 1882, p. 169.—, Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 417.—Bassler Proc. U. S. Nat. Mus., 30, 1906, p. 54.

Stictoporella flexuosa—Continued.

Stictoporella interstincta Ulrich, Jour. Cincinnati Soc. Nat. Hist., 5, 1882, p. 169, pl. 8, figs. 9, 9a.—Miller, N. A. Geol. Pal., 1889, figs. 520, 521 (p. 325).—Ulrich, Geol. Surv. Illinois, 8, 1890, fig. 14a, b (p. 394).

Eden (Economy): Cincinnati, Ohio, and vicinity.

Plesiotype.—Cat. No. 43722, U.S.N.M. (*holotype* of S. interstincta).

Stictoporella frondifera Ulrich.

Stictoporella frondifera Ulrich, 14th Ann. Rep. Geol. Nat. Hist. Surv. Minnesota, 1886, p. 72; Geol. Minnesota, 3, 1893, p. 183, pl. 11, figs. 12-19.

Black River (Decorah): Minneapolis, St. Paul, Preston, Fountain, etc., Minnesota.

Cotypes.—Cat. No. 32472, U.S.N.M.

STICTOPORELLA INTERSTINCTA Ulrich. See Stictoporella flexuosa.

Stictoporella rigida Ulrich.

Stictoporella rigida Ulrich, Jour. Cincinnati Soc. Nat. Hist., 12, 1890, p. 188, fig. 13; Geol. Minnesota, 3, 1893, p. 180, pl. 11, figs. 20, 21.

Black River (Decorah): Fountain, St. Paul, and Cannon Falls, Minnesota.

Holotype.—Cat. No. 43723, U.S.N.M.

STICTOTRYPA Ulrich. Genotype: S. similis Hall.

Stictotrypa Ulrich, Geol. Surv. Illinois, 8, 1890, p. 393; Zittel's Textb. Pal. (Engl. ed.), 1896, p. 279.—Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 54.—Bassler, Bull. U. S. Geol. Surv., 292, 1906, p. 61.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 166.

Stictotrypa orbipora (Hall).

Stictopora orbipora Hall, Trans. Albany Inst., 10, 1883, p. 61 (abstract, 1879, p. 5); 11th Ann. Rep. Indiana Geol. Nat. Hist., 1882, p. 248.

Stictotrypa orbipora Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 418.

Niagaran (Waldron): Waldron, Indiana.

Stictotrypa punctipora (Hall).

Stictopora punctipora Hall, Pal. New York, 2, 1852, p. 157, pl. 40B, figs. 2a-c.—Miller, N. A. Geol. Pal., 1889, fig. 519 (p. 324).

Stictotrypa punctipora Ulrich, Geol. Surv. Illinois, 8, 1890, fig. 13a (p. 394).—Bassler, Bull. U. S. Geol. Surv., 292, 1906, p. 61, pl. 22, figs. 7-11; pl. 24, figs. 26, 27.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 166, fig. 214k.

Clinton (Rochester): Lockport, Rochester, and Niagara Falls, New York; Grimsby, Hamilton, and Thorold, Ontario.

Plesiotypes.—Cat. Nos. 35776, 35758, U.S.N.M.

Stictotrypa similis (Hall).

Stictopora similis Hall, 28th Ann. Rep. New York State Mus., doc. ed., 1876, pl. 11, figs. 13-16; ibid., mus. ed., 1879, p. 122, pl. 11, figs. 13-16; 11th Ann. Rep. Indiana Geol. Nat. Hist., 1882, p. 247, pl. 10, figs. 13-16.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1070, figs.

Stictotrypa similis Ulrich, Geol. Surv. Illinois, 8, 1890, fig. 13b, c (p. 394).

Stictopora ovatipora (not of Hall) Miller, N. A. Geol. Pal., 1889, fig. 518 (p. 324).

Niagaran (Waldron): Waldron, Indiana.

Plesiotype.—Cat. No. 43326, U.S.N.M.

STIGMATELLA Ulrich and Bassler. Genotype: S. crenulata Ulrich and Bassler.
Stigmatella Ulrich and Bassler, Smiths. Misc. Coll., 47, 1904, pp. 24, 33.—Bassler, Bull. U. S. Geol. Surv., 292, 1906, pp. 27, 28.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 756.—Bassler, Bull. U. S. Nat. Mus., 77, 1911, pp. 210, 211.

Stigmatella alcicornis Cumings and Galloway.
Stigmatella alcicornis Cumings and Galloway, 37th Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1913, p. 84, pl. 18, figs. 1–1e.
Maysville (Fairmount): Big Four Railroad, near Guilford, Indiana.

Stigmatella catenulata Cumings and Galloway.
Stigmatella catenulata Cumings and Galloway, 37th Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1913, p. 85, pl. 19, figs. 1–1c.
Richmond (Arnheim): Big Four Railroad, near Harmon's Station, Indiana.

Stigmatella claviformis (Ulrich).
Leptotrypa claviformis Ulrich, Geol. Minnesota, 3, 1893, p. 319, pl. 27, figs. 20, 21.
Stigmatella claviformis Bassler, Bull. U. S. Nat. Mus., 77, 1911, p. 217, fig. 119.
Black River (Decorah): Minneapolis and St. Paul, Minnesota.
Middle Ordovician (Wassalem): Uxnorm, Esthonia, Russia.
Cotypes.—Cat. No. 43611, U.S.N.M.

Stigmatella clavis (Ulrich).
Leptotrypa clavis Ulrich, Jour. Cincinnati Soc. Nat. Hist., 6, 1883, p. 161, pl. 6, figs. 3, 3a.
Stigmatella clavis Ulrich and Bassler, Smiths. Misc. Coll., Quart., 47, 1904, p. 34, pl. 10, fig. 4.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 881, pl. 24, figs. 2, 2a; pl. 25, fig. 3.
Eden (Economy-McMicken): Cincinnati, Ohio, and vicinity.
Cotypes and *plesiotypes.*—Cat. Nos. 43718, 44060, U.S.N.M.

Stigmatella crenulata Ulrich and Bassler.
Stigmatella crenulata Ulrich and Bassler, Smiths. Misc. Coll., Quart., 47, 1904, p. 34, pl. 9, figs. 1–4; pl. 14, figs. 1, 2.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 882, pl. 24, fig. 4–4d.
Richmond (Waynesville): Hanover, Waynesville, Clarksville, etc., Ohio.
Cotypes.—Cat. No. 43197, U.S.N.M.

Stigmatella dychei (James).
Monticulipora (Monotrypa) dychei James, Paleontologist, No. 6, 1882, p. 52.
Monticulipora dychei James, Jour. Cincinnati Soc. Nat. Hist., 6, 1883, p. 235, pl. 10, figs. 2–2e.—James and James, ibid., 11, 1888, p. 25.—J. F. James, ibid., 18, 1895, p. 83.
Leptotrypa? dychei Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 298.
Stigmatella dychei Ulrich and Bassler, Smiths. Misc. Coll., Quart., 47, 1904, p. 34, pl. 10, fig. 11.—Bassler, Proc. U. S. Nat. Mus., 30, 1906, p. 54, pl. 3, figs. 8–10.
Maysville (Mount Auburn): Lebanon, etc., Ohio.
Plesiotype.—Cat. No. 44059, U.S.N.M.

Stigmatella globata Bassler.
Stigmatella globata Bassler, Bull. U. S. Geol. Surv., 292, 1906, p. 28, pl. 14, figs. 6–9.
Clinton (Rochester): Lockport and Rochester, New York.
Holotype.—Cat. No. 35769, U.S.N.M.

Stigmatella incrustans Cumings and Galloway.

Stigmatella incrustans Cumings and Galloway, 37th Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1913, p. 86, pl. 19, fig. 2; pl. 20, figs. 1, 1a.

Richmond (Liberty): Big Four Railroad, near Weisburg, Indiana.

Stigmatella interporosa Ulrich and Bassler.

Stigmatella interporosa Ulrich and Bassler, Smiths. Misc. Coll., Quart., 47, 1904, p. 35, pl. 12, figs. 4, 5.

Richmond (Waynesville): Hanover, Ohio.

Cotypes.—Cat. No. 43202, U.S.N.M.

Stigmatella irregularis (Ulrich).

Chætetes irregularis Ulrich, Jour. Cincinnati Soc. Nat. Hist., 2, 1879, p. 129, pl. 12, figs. 10–10b.

Monticulipora (Monotrypa) irregularis Nicholson, Genus Monticulipora, 1881, p. 177, fig. 35.

Monotrypa irregularis Ulrich, Jour. Cincinnati Soc. Nat. Hist., 5, 1882, p. 256.

Monticulipora irregularis James and James, ibid., 10, 1888, p. 163.—J. F. James, ibid., 15, 1893, p. 159.

Leptotrypa? irregularis Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 298.

Stigmatella irregularis Ulrich and Bassler, Smiths. Misc. Coll., Quart., 47, 1904, p. 34, pl. 10, figs. 5, 6; pl. 14, figs. 6–8.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 883, pl. 25, figs. 2, 2a.

Maysville (Bellevue): Hamilton, Morrow, Mason, and Cincinnati, Ohio.

Cotypes.—Cat. No. 43719, U.S.N.M.

Stigmatella nana Ulrich and Bassler.

Stigmatella nana Ulrich and Bassler, Smiths. Misc. Coll., Quart., 47, 1904, p. 35, pl. 10, figs. 7–10; pl. 14, figs. 11, 12.

Eden (Economy): Covington, Kentucky, and vicinity.

Cotypes.—Cat. No. 43203, U.S.N.M.

Stigmatella nicklesi Ulrich and Bassler.

Stigmatella nicklesi Ulrich and Bassler, Smiths. Misc. Coll., Quart., 47, 1904, p. 36, pl. 10, figs. 1–3; pl. 14, figs. 9, 10.

Maysville (Fairmount): Cincinnati, Ohio, and vicinity.

Cotypes.—Cat. No. 43204, U.S.N.M.

Stigmatella personata Ulrich and Bassler.

Stigmatella personata Ulrich and Bassler, Smiths. Misc. Coll., Quart., 47, 1904, p. 35, pl. 12, figs. 1–3.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 884, pl. 24, figs. 3, 3d.

Richmond (Waynesville): Hanover, Ohio.

Holotype.—Cat. No. 43201, U.S.N.M.

Stigmatella sessilis Cumings and Galloway.

Stigmatella sessilis Cumings and Galloway, 37th Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1913, p. 87, pl. 19, fig. 3; pl. 20, figs. 2–2b.

Maysville (Fairmount): Big Four Railroad, near Manchester Station, Indiana.

Stigmatella spinosa Ulrich and Bassler.

Stigmatella spinosa Ulrich and Bassler, Smiths. Misc. Coll., Quart., 47, 1904, p. 34, pl. 9, figs. 5–8.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 884, pl. 25, figs. 1, 1d.

Richmond: Versailles, Indiana.

Holotype.—Cat. No. 43200, U.S.N.M.

STOMATIA AURIFORMIS Emmons. See Diaphorostoma auriforme.

STOMATOPORA Bronn. Genotype: Alecto dichotoma Lamouroux.

Alecto Lamouroux, 1821, Blainville, Johnston, Milne-Edwards, Busk, and others (not Alecto Leach, 1814, a genus of Echinodermata).

Aulopora (in part) Goldfuss, Reuss, Hall, Nicholson.

Stomatopora Bronn, Pflanzenth., 1825, p. 27.—D'Orbigny, Pal. Francais, Terr. Cret., 5, 1854, p. 833.—Haime, Bry. Foss. Form. Juras., 1854, p. 159 (extra ed., p. 3).—Pictet, Traite de Pal., 2d ed., 4, 1857, p. 142.—Zittel, Handb. Pal., 1, 1880, p. 598.—Hincks (part) British Marine Polyz., 1880, p. 424.—Ulrich, Jour. Cincinnati Soc. Nat. Hist., 5, 1882, p. 149.—Vine, Geol. Mag., dec. 2, 8, 1881, p. 514; Rep. 51st Meeting British Assoc. Adv. Sci., 1882, p. 171; Rep. 53d Meeting British Assoc. Adv. Sci., 1884, p. 185; Proc. Yorkshire Geol. Polyt. Soc., 9, 1887, p. 186.—Miller, N. A. Geol. Pal., 1889, p. 325.—Ulrich, Geol. Surv. Illinois, 8, 1890, p. 367; Geol. Minnesota, 3, 1893, p. 115; Zittel's Textb. Pal. (Eng. ed.) 1896, p. 260.—Simpson, 14th Rep. State Geol. New York, 1897, p. 597.—Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 20.—Cumings, Amer. Jour. Sci., 4th ser., 17, 1904, p. 75, fig. 81.—Hennig, Archiv. fur Zool., K. Sven. Vet.-Akad. Stockholm, 3, No. 10, 1906, p. 24.—Bassler, Bull. U. S. Geol. Surv., 292, 1906, p. 14.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 118.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 757.—Bassler, Bull. U. S. Nat. Mus., 77, 1911, pp. 59, 60.

STOMATOPORA (part) of authors. See Corynotrypa Bassler.

Stomatopora arachnoidea (Hall).

Aulopora arachnoidea Hall, Pal. New York, 1, 1847, p. 76, pl. 26, figs. 6a–c, and woodcut on p. 76.—Nicholson, Pal. Ohio, 2, 1875, p. 216, pl. 23, figs. 1, 1b.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 230, fig. 83, pl. 7, fig. 6.—Nicholson, Rep. 44th Meeting British Assoc. Adv. Sci., Notes and Abstracts, 1875, p. 90.—Chamberlin, Geol. Wisconsin, 1, 1883, p. 173, fig.

Stomatopora arachnoidea Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 885, pl. 32, figs. 2–2c.—Bassler, Bull. U. S. Nat. Mus., 77, 1911, pp. 60, 61, fig. 7.

Trenton-Richmond: Cincinnati, Ohio (Maysville); various localities in the United States and Canada.

STOMATOPORA AULOPOROIDES Miller. See Proboscina auloporoides.

STOMATOPORA CANADENSIS Whiteaves. See Corynotrypa canadensis.

STOMATOPORA CONFUSA Miller. See Proboscina confusa.

STOMATOPORA DELICATULA Grabau and Shimer. See Corynotrypa delicatula.

STOMATOPORA DELICATULA-TENUISSIMA Nickles and Bassler. See Corynotrypa delicatula.

STOMATOPORA DISSIMILIS Vine. See Corynotrypa dissimilis.

STOMATOPORA DISSIMILIS var. ELONGATA Vine. See Corynotrypa elongata.

STOMATOPORA ELONGATA Vine. See Corynotrypa elongata.

STOMATOPORA FRONDOSA Miller. See Proboscina frondosa.

STOMATOPORA INFLATA Vine. See Corynotrypa inflata.

STOMATOPORA MINOR Hennig. See Corynotrypa dissimilis.

STOMATOPORA PARVA Ringueberg. See Corynotrypa elongata.

STOMATOPORA PROUTANA Ulrich. See Corynotrypa delicatula.

STOMATOPORA RECTA Ringueberg. See Corynotrypa dissimilis.

STOMATOPORA TENUISSIMA Ulrich. See Corynotrypa delicatula.

STOMATOPORA TURGIDA Ulrich. See Corynotrypa turgida.

STRAPAROLLINA Billings. Genotype: S. pelagica Billings.
Straparollina Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 223.—Koken, Neues Jahrb. Min. Geol. Pal., 6, Beilage-Band, 1889, p. 428.—Miller, N. A. Geol. Pal., 1889, p. 426.

Straparollina asperostriata (Billings).
Straparollus asperostriatus Billings, Canadian Nat. Geol., 5, 1860, p. 162; Geol. Canada, Geol. Surv. Canada, 1863, p. 144, fig. 84.
Straparollina asperostriatus Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 223 (gen. ref.).—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, p. 1076, fig.
Black River (Leray): Pauquettes Rapids, Ottawa River, Canada.

Straparollina circe (Billings).
Straparollus Circe Billings, Canadian Nat. Geol., 5, 1860, p. 161, figs. 1-3; Geol. Canada, Geol. Surv. Canada, 1863, p. 144, fig. 85a–c.
Straparollina Circe Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 223 (gen. ref.).—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1078, figs.
Black River (Leray): Pauquettes Rapids, Ottawa River, Canada.

Straparollina daphne (Billings).
Straparollus Daphne Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 160, fig. 145 (adv. sheets, 1862).
Straparollina Daphne Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 2, 18 p. 93; Cont. Can. Pal., Geol. Surv. Canada, 1, pt. 4, 1892, p. 329.
Niagaran (Guelph): Galt, Ontario.

Straparollina eurydice (Billings).
Straparollus Eurydice Billings, Canadian Nat. Geol., 5, 1860, p. 162, figs. 4, 5 Geol. Canada, Geol. Surv. Canada, 1863, p. 144, fig. 86a, b.
Straparollina eurydice Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 22 (gen. ref.).—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1078, figs.
Black River (Leray): Pauquettes Rapids, Ottawa River, Canada.

STRAPAROLLINA HARPA Hudson. See Holopea harpa.

Straparollina minima Whitfield.
Straparollina minima Whitfield, Bull. Amer. Mus. Nat. Hist., 9, 1897, p. 17 pl. 4, figs. 10–12.—Seely, Vermont State Geol. Rep. 7, pl. 61, figs. 10-12.
Canadian (Beekmantown): Colchester, Vermont.

Straparollina pelagica Billings.
Straparollina pelagica Billings, Pal. Foss., Geol. Surv. Canada, 1865, p. 223, fig. 205.—Miller, N. A. Geol. Pal., 1889, p. 426, fig. 714.
Canadian (Quebec—G, H): Pistolet Bay and Cape Norman, Newfoundland.

STRAPAROLLUS Montfort. Genotype: S. dionysii Montfor
Straparollus Montfort, Conch. Syst., 2, 1810, p. 174.—D'Orbigny, Prodr. de Pal. 1849, 1, p. 6.—McCoy, British Pal. Rocks Foss., 1854, p. 536.—Pictet, Trait de Pal., 2d ed., 3, 1855, p. 153.—Meek and Worthen, Proc. Acad. Nat. Sci.

LLUS—Continued.
delphia, 1860, p. 462; Geol. Surv. Illinois, 2, 1866, p. 158.—Hall, Pal. York, 5, pt. 2, 1879, p. 54.—Koninck, Ann. d. Mus., Royal d'Hist. Nat. elgique, 6, 1881, p. 119.—Zittel, Handb. Pal., 2, 1882, p. 205.—Miller, . Geol. Pal., 1889, p. 426.—Keyes, Amer. Geol., 5, 1890, p. 194; Missouri Surv., 5, 1894, p. 155.—Koken, Leitfossilien, Leipzig, 1896, p. 126; s Jahrb. Min., Geol., Pal., 1, 1898, p. 23; ibid., 6, Beilage-Band, 1899, p. -Grabau, Bull. Buffalo. Soc. Nat. Sci., 6, 1899, p. 277, fig. 205.—Pilsbry. l-Eastman Textb. Pal., 1, 1900, p. 446.—Dall, ibid., 2d ed., 1913, p. 527.

s ANGULATUS Emmons. See Raphistoma stamineum.

s ASPEROSTRIATUS Billings. See Straparollina asperostriata.

s bicarinatus Calvin.
lus bicarinatus Calvin, Bull. Lab. Nat. Hist. State Univ. Iowa, 1, 1890, 9, pl. 2, fig. 2a, b.
: Monmouth, Iowa.

s CIRCE Billings. See Straparollina circe.

s claytonensis Calvin.
lus claytonensis Calvin, Bull. Lab. Nat. Hist. State Univ. Iowa, 2, 1892, 1; Amer. Geol., 10, 1892, p. 146.
(Oneota): Northeastern Iowa.

s COMPLANATUS Emmons. See Ophileta complanata.

s CRENULATUS Whiteaves. See Poleumita crenulata.

s DAPHNE Billings. See Straparollina daphne.

s EURYDICE Billings. See Straparollina eurydice.

s HEMISPHERICUS D'Orbigny. See Diaphorostoma hemisphericum.

s hippolyta Billings.
lus Hippolyta Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 160, 44a, b.—Miller, N. A. Geol. Pal., 1889, p. 426, fig. 715.—Whiteaves, Pal. , Geol. Surv. Canada, 3, pt. 2, 1895, p. 94 (loc. occ.).
(Guelph): Galt, Ontario; Wisconsin.

s incarinatum Foerste.
lus (cf. Oriostoma) incarinatum Foerste, Geol. Surv. Ohio, Pal., 7, 1893, 2, pl. 37A, figs. 7a, b.
edinan (Brassfield): Huffman's quarry, near Dayton, Ohio.

s intralobatus Sardeson.
lus intralobatus Sardeson, Bull. Minnesota Acad. Nat. Sci., 1896, p. 101, , fig. 20.
(Oneota): Altura, Winona County, Minnesota.

s LABIATUS Emmons. See Raphistoma stamineum.

s LEVATUS D'Orbigny. See Ophileta levata.

s MAGNUS D'Orbigny. See Maclurites magnus.

s MATUTINA Emmons. See Maclurites matutinus.

s MINNESOTENSIS Owen. See Raphistoma minnesotense.

Straparollus mopsus Hall.
Straparollus mopsus Hall, 20th Rep. New York State Cab. Hist., 1868, p. 342, pl. 15 (6), figs. 21, 22; rev. ed., 1870, p. 390, pl. 15, figs. 21, 22.
Euomphalus (Straparollus) mopsus Whitfield, Geol. Wisconsin, 4, 1882, p. 358 (gen. ref.).
Niagaran (Racine): Racine and Waukeska, Wisconsin.

Straparollus niagarensis Hall and Whitfield.
Straparollus Niagarensis Hall and Whitfield, Geol. Surv. Ohio, Pal. 2, 1875, p. 144, pl. 8, fig. 3.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1079, fig.
Niagaran (Guelph): Cedarville, Ohio.

Straparollus parvus Cleland.
Straparollus parva Cleland, Bull. Amer. Pal., 3, 1900, p. 127 (255), pl. 15, figs. 10, 11.
Canadian (Tribes Hill): Near Fort Hunter, New York.

STRAPAROLLUS PERVETUSTUS D'Orbigny. See Euconia pervetusta.

STRAPAROLLUS PLANISTRIA Emmons. See Raphistoma stamineum.

Straparollus pristiniformis Calvin.
Straparollus pristiniformis Calvin, Amer. Geol., 10, 1892, p. 146; Bull. Lab. Nat. Hist. Univ. Iowa, 2, 1892, p. 191.
Ozarkian (Oneota): Northeastern Iowa.

Straparollus pumilis Savage.
Straparollus pumilis Savage, Bull. Geol. Surv. Illinois 23, 1913, p. 100, pl. 5, fig. 29.
Upper Medinan (Edgewood): Near Edgewood, Missouri.

Straporollus sanctisabæ (Roemer).
Euomphalus sancti-sabae Roemer, Die Kreidebildungen von Texas, 1852, p. 91, 421, pl. 11, figs. 5a, b.
Straporollus sanctisabae Miller, N. A. Geol. Pal. 1889, p. 426 (gen. ref.).
Ordovician: San Saba River, Texas.

Straparollus sinuatus (Hall).
Euomphalus sinuatus Hall, Pal. New York, 3, 1859, p. 340, pl. 69, fig. 1a, b.
Straparollus sinuatus Miller, N. A. Geol. Pal., 1889, p. 426 (gen. ref).
Euomphalus cf. sinuatus Foerste, Proc. Boston Soc. Nat. Hist., 24, 1889, p. 292, pl. 5, figs. 10–12.
Cayugan (Manlius): Herkimer County, New York.

STRAPAROLLUS SORDIDUS Emmons. See Maclurites sordidus.

STRAPAROLLUS STRIATUS Emmons. See Raphistoma striatum.

Straparollus tricarinatus Calvin.
Straparollus tricarinatus Calvin, Bull. Lab. Nat. Hist. State Univ. Iowa, 1, 1890, p. 179, pl. 2, figs. 2a, b.
Niagaran: Monmouth, Iowa.

STRAPAROLLUS UNIANGULATUS Emmons. See Helicotoma uniangulata.

Straparollus valvataformis Shumard.
Straparollus valvataformis Shumard, Trans. Acad. Sci. St. Louis, 2, 1863, p. 105.—Keyes, Missouri Geol. Surv., 5, 1894, p. 157, pl. 51, fig. 8.
Canadian (Yellville): Ozark County, Missouri.

Strephochetus Seely. See Girvanella Nicholson and Etheridge.

Strephodes? Austini Salter. See Acervularia austini.

Strephodes Pickthornii Salter. See Cyathophyllum pickthorni.

STREPTASTER Hall. Genotype: Agelacrinus vorticellatus Hall.
Streptaster Hall, 24th Rep. New York State Cab. Nat. Hist., 1872, pl. 6.—Foerste, Bull. Sci. Lab. Denison Univ., 17, 1914, p. 450.

Streptaster reversatus Foerste.
Streptaster reversata Foerste, Bull. Sci. Lab. Denison Univ., 17, 1914, p. 451, pl. 4, fig. 3.
Eden (Southgate): Two miles west of Million, Kentucky.

Streptaster septembrachiatus (Miller and Dyer).
Agelacrinus septembrachiatus Miller and Dyer, Jour. Cincinnati Soc. Nat. Hist., 1, 1878, p. 27, pl. 1, fig. 9.
Agelacrinites septembrachiatus Jaekel, Stammesg. Pelmat., 1, Thecoidea u. Cystoidea, Berlin, 1899, p. 50.
Streptaster septembrachiatus Foerste, Bull. Sci. Lab. Denison Univ., 17, 1914, pl. 4, fig. 2.
Richmond (Liberty and Elkhorn): Waynesville and near Dayton, Ohio.

Streptaster vorticellatus (Hall).
Agelacrinus (Streptaster) vorticellatus Hall, 24th Rep. New York State Cab. Nat. Hist., 1872, p. 215, pl. 6, figs. 11–13 (adv. sheets, 1871).
Agelacrinites vorticellata Meek, Geol. Surv. Ohio, Pal., 1, 1873, p. 57, pl. 3, figs. 7a, b.—Jaekel Stammesg. Pelmat, 1, Thecoidea und Cystoidea, 1899, p. 50.
Agelacrinus vorticellatus Haeckel, Amphor. u. Cystoideen, Leipzig, 1896, p. 112.
Streptaster vorticellatus Foerste, Bull. Sci. Lab. Denison Univ., 17, 1914, pl. 6, fig. 4.
Maysville (Fairmount—Corryville): Cincinnati, Ohio, and vicinity.

STREPTELASMA Hall. Genotype: S. corniculum Hall.
Streptoplasma Hall, Pal. New York, 1, 1847, p. 17, (changed to Streptelasma in explanation of figures.)
Streptelasma D'Orbigny, Prodr. de Pal., 1, 1849, p. 24.—Edwards and Haime, Mon. d. Polyp. Foss. d. Terr. Pal. (Arch. du Mus. d'Hist. Nat., 5) 1851, p. 168, 398.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 228.—Billings, Canadian Nat. Geol., 1, 1856, p. 122.—Milne-Edwards, Hist. Nat. d. Corall., 3, 1860, p. 392.—Hitchcock, Geol. Vermont, 1, 1861, p. 290.—Dybowski, Archiv. f. Natur. Liv-, Ehst- und Kurl., 5, 1873, pp. 334, 381.—Nicholson, Rep. Pal. Prov. Ontario, pt. 2, 1875, p. 26; Geol. Surv. Ohio, Pal., 2, 1875, p. 217.—Rominger, Geol. Surv. Michigan, 3, pt. 2, 1876, p. 151.—Nicholson and Etheridge, Mon. Sil. Foss. Girvan Dist., 1878, p. 67.—Nicholson, Man. Pal., 1, 1879, p. 247, fig. 127B; pp. 278, 279, fig. 156a; p. 280, fig. 157; p. 297, figs. 178a, b.—Zittel, Handb. Pal., 1, 1879, p. 228.—Roemer, Leth. geog., pt. 1, Leth. Pal., 1883, p. 365.—Hall and Simpson, Pal. New York 6, 1887, p. xi.—Miller, N. A. Geol. Pal., 1889, p. 204.—Sherzer, Amer. Geol., 7, 1891, pp. 284–289.—James, Jour. Cincinnati Soc. Nat. Hist., 15, pt. 4, 1893, pp. 145–146.—Winchell and Schuchert, Geol. Nat. Hist. Surv. Minnesota, 3, pt. 1, 1895, p. 87.—Koken, Die Leitfossilien, Leipzig, 1896, p. 308.—Girty, 19th Ann. Rep. U. S. Geol. Surv., 1899, p. 556.—Grabau, Bull. Buffalo Soc. Nat. Sci., 6, 1899, p. 122.—Zittel-Eastman Textb. Pal., 1, 1900, p. 75.—Lambe, Cont. Can. Pal., Geol. Surv. Canada, 4, pt. 2, 1901, p. 107.—Pocta, Syst. Sil. du Centre Boheme, 8, pt. 2, 1902, p. 154.—Grabau and Shimer,

STREPTELASMA—Continued.

N. A. Index Fossils, 1, 1906, p. 54.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 700.—Zittel-Eastman Textb. Pal., 2d ed., 1913, p. 82.

Petraia Zittel, Handb. Pal., 1, 1879, p. 226.—Roemer, Leth. geog., pt. 1, Leth. Pal., 1883, p. 410.—Miller, N. A. Geol. Pal., 1889, p. 199.—Sherzer, Amer. Geol., 7, 1891, pp. 278-283.—Koken, Die Leitfossilien, Leipzig, 1896, p. 313.—Lambe, Cont. Canadian Pal., Geol. Surv. Canada, 4, pt. 2, 1901, p. 104.

Observation.—The type of Streptelasma has been cited by most authors as S. expansum because this species was the first to follow the generic diagnosis. This species, however, was founded upon a cystid plate (Blastoidocrinus carcaridens). Hall undoubtedly had S. corniculum in mind when he drew up the generic diagnosis, and S. expansum came first simply because of geological position. Lambe has employed Petraia for certain American species usually referred to Streptelasma but differing in having a deep calyx, no tabulæ, dissepiments, or columella. Until the type of Petraia is better known it is believed best to refer these species to Streptelasma.

Streptelasma angulatum (Billings).

Petraia angulata Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 103, fig. 90a, b (Adv. sheets, 1862); Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 7 (loc. ref.).

Streptelasma angulatum Miller, N. A. Geol. Pal., 1889, p. 204 (gen. ref.).—Lambe, Cont. Can. Pal., Geol. Surv. Canada, 4, pt. 2, 1901, p. 112.

Richmond (English Head, Charleton): Charleton Point, West End, etc., Anticosti.

Streptelasma (Petraia?) apertum (Billings).

Petraia aperta Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 102, fig. 89a, *b* (Adv. sheets, 1862).—Lambe, Cont. Can. Pal., Geol. Surv. Canada, 4, pt. 2, 1901, p. 105.

Streptelasma apertum Miller, N. A. Geol. Pal., 1889, p. 204 (gen. ref.).

Black River (Leray): Pauquettes Rapids, Ottawa River, Canada.

STREPTELASMA (DUNCANELLA) BOREALIS Hall. See Duncanella borealis.

Streptelasma breve Winchell and Schuchert.

Streptelasma breve Winchell and Schuchert, Geol. Minnesota, 3, pt. 1, 1895, p. 92, fig. 7.

Black River (Platteville): Near Fountain, Minnesota.

Cotypes.—Cat. No. 42538, U.S.N.M.

STREPTELASMA CALICULA var. GEOMETRICUS Foerste. See Enterolasma geometricum.

STREPTELASMA (ENTEROLASMA) CALICULUM Hall. See Enterolasma caliculum.

Streptelasma conulus Rominger.

Streptelasma conulus Rominger, Geol. Surv. Michigan, 3, pt. 2, 1876, p. 144, pl. 39, fig. 4.

Zaphrentis conulus Davis, Kentucky Fossil Corals, Geol. Surv. Kentucky, pt. 2, 1885, pl. 133, figs. 12-14.

Niagaran: Drummond's Island, Lake Huron; Louisville, Kentucky (Louisville).

Streptelasma corniculum Hall.

Streptoplasma corniculum Hall, Pal. New York, 1, p. 69, pl. 25, figs. 1a-e.

Streptelasma corniculum Edwards and Haime, Mon. d. Polyp. Foss. d. Terr. Pal., 1851 (Arch. du Mus. d'Hist. Nat., 5), p. 398, pl. 7, figs. 4-4b (figures probably refer to S. rusticum).—Billings, Canadian Nat. Geol., 1, 1856,

Streptelasma corniculum—Continued.

p. 122, figs. 3, 4.—Hall, 12th Rep. New York State Cab. Nat. Hist., 1859, p. 75.—Hitchcock, Geol. Vermont, 1, 1861, p. 291, fig. 191.—Rominger, Geol. Surv. Michigan, 3, pt. 2, 1876, p. 142, pl. 51, lower tier.—Nicholson, Ann. Mag. Nat. Hist., 4th ser., 18, 1876, p. 94, pl. 5, figs. 15, 15a.—Zittel, Handb. Pal., 1, 1879, p. 217, fig. 126; p. 228, fig. 134.—Roemer, Leth. geog., pt. 1, Leth. Pal., 1883, p. 366.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1085, figs.—Ami, Ottawa Nat., 8, 1894, p. 84.—Keyes, Missouri Geol. Surv., 4, 1894, p. 117, pl. 13, fig. 9.—Winchell and Schuchert, Geol. Minnesota, 3, pt. 1, 1895, p. 90, pl. G, figs. 20, 21.—Shuchert, Proc. U. S. Nat. Mus., 22, 1900, p. 154.—Ruedemann, Bull. New York State Mus., 49, 1901, p. 10.—Lambe, Cont. Can. Pal., Geol. Surv. Canada, 4, pt. 2, 1901, p. 108, pl. 6, figs. 7a-b.—Weller, Geol. Surv. New Jersey, Pal. 3, 1903, p. 136, pl. 6, figs. 6, 7.—Grabau and Shimer, N. A. Index Fossils, 1, 1906, p. 55, fig. 76c-d.

Streptelasma (Petraia) corniculum Chamberlin, Geol. Wisconsin, 1, 1883, p. 153, fig.

Streptoplasma parvula Hall, Pal. New York, 1, 1847, p. 71, pl. 25, figs. 4a-c.

Streptelasma parvula Hall, 12th Rep. New York State Cab. Nat. Hist., 1859, p. 75.

Petraia Ottawaensis Billings, Canadian Nat. Geol., n. s., 2, 1865, p. 429.

Streptoplasma crassa Hall, Pal. New York, 1, 1847, p. 70, pl. 25, figs. 2a-c.

Turbinolia mitrata Eaton, Geol. Textb., 2d ed., 1832, p. 39, pl. 3, figs. 32, 33.—Clarke, 11th Rep. State Geol. New York, 1894, p. 34; ibid., 45th Rep. New York State Mus., 1894, p. 350.

Petraia cornicula Chapman, Canadian Jour., n. s., 6, 1861, p. 510, fig. 79.—Billings, Geol. Canada, Geol. Surv. Canada, 1863, p. 156, fig. 118.—Chapman, Canadian Jour., n. s., 8, 1863, p. 198, fig. 178; Expos. Min. Geol. Canada, 1864, p. 104, fig. 79, p. 170, fig. 178.

Petraia (Streptelasma) corniculum Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 627, fig.

Streptoplasma multilamellosa Hall, Pal. New York, 1, 1847, p. 70, pl. 25, figs. 3a-c.

Trenton: Trenton Falls, Middleville, etc., New York. Widely distributed in the United States and Canada.

STREPTELASMA CORNICULUM (part) Nicholson. See Streptelasma rusticum.

STREPTELASMA CRASSA Hall. See Streptelasma corniculum.

Streptelasma dispandum Foerste.

Streptelasma dispandum Foerste, Bull. Sci. Lab. Denison Univ., 14, 1909, p. 307, pl. 9, fig. 4a, b.

Richmond (Waynesville): Moores Hill, Versailles, etc., Indiana; Ohio.

Streptelasma divaricans (Nicholson).

Palæophyllum divaricans Nicholson, Geol. Surv. Ohio, Pal., 2, 1875, p. 220, pl. 22, figs. 10, 10b.—White, 11th Ann. Rep. Indiana Dep. Geol. Nat. Hist., 1882, p. 377, pl. 52, fig. 4.—Hall, 12th, Ann. Rep. Indiana Dep. Geol. Nat. Hist., 1883, p. 251, pl. 1, fig. 5.—Miller, N. A. Geol. Pal., 1889, p. 199, fig. 204.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 589, figs.—James, Jour. Cincinnati Soc. Nat. Hist., 15, pt. 4, 1893, p. 147.

Streptelasma divaricans Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 707, pl. 1, figs. 6, 6a.—Foerste, Bull. Sci. Lab. Denison Univ., 14, 1909, p. 307, pl. 10, figs. 4a-e.

Streptelasma divaricans—Continued.

Zaphrentis inequalis Hall, 35th Rep. New York State Mus. Nat. Hist., 1884, pp. 430, 482 (ext., 1882, p. 26).

Richmond (Waynesville-Whitewater): Richmond, etc., Indiana; Oxford, etc., Ohio; Kentucky.

Streptelasma divaricans angustatum Foerste.

Streptelasma divaricans angustatum Foerste, Bull. Sci. Lab. Denison Univ., 14, 1909, p. 308, pl. 9, fig. 6a, b.

Richmond (Whitewater): Osgood, Indiana.

Streptelasma expansum (Hall).

Streptoplasma expansa Hall, Pal. New York, 1, 1847, p. 17, pl. 4, figs. 6a, b.

Streptelasma? expansa Edwards and Haime, Mon. d. Polyp. Foss. d. Terr. Pal., 1851 (Arch. du Mus. d' Hist. Nat., 5), p. 399.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 228, pl. 3, figs. 6, 7a, b.—Milne-Edwards, Hist. Nat. d. Corall., 3, 1860, p. 393.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1085, figs.—Clarke and Ruedemann, Bull. New York State Mus., 65, 1903, p. 56.

Chazyan: Chazy, New York.

Observation.—Founded upon a section of cystid plate (Blastoidocrinus).

Streptelasma? (Zaphrentis?) extans Hall.

Streptelasma? (Zaphrentis?) extans Hall, 35th Rep. New York State Mus. Nat. Hist., 1884 (ext., 1882, p. 5), p. 409.

Niagaran (?Racine): Milwaukee, Wisconsin.

STREPTELASMA? GEOMETRICUM Foerste. See Enterolasma geometricum.

Streptelasma hoskinsoni Foerste.

Streptelasma Hoskinsoni Foerste, Proc. Boston Soc. Nat. Hist., 24, 1890, p. 344, pl. 9, figs. 1–4 (?5, 6); Geol. Surv. Ohio, Pal., 7, 1893, p. 601, pl. 34, figs. 1–6 (loc. occ.).

Upper Medinan (Brassfield): Near New Carlisle, Ohio.

Streptelasma insolitum Foerste.

Streptelasma insolitum Foerste, Bull. Sci. Lab. Denison Univ., 14, 1909, p. 306, pl. 10, fig. 3.

Richmond (Whitewater) bed: Decatur, Jennings, and Ripley Counties, Indiana.

Streptelasma? latusculum (Billings).

Petraia latuscula Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 104, fig. 92a, b; Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 33 (loc. ref.).

Streptelasma latusculum Lambe, Cont. Can. Pal., Geol. Surv. Canada, 4, pt. 2, 1901, p. 114, pl. 6, figs. 9, 9a.

Anticostian (Gun River-Jupiter River): Three miles west of Jupiter River, East Point, and the Jumpers, Anticosti.

Streptelasma latusculum trilobatum (Whiteaves).

Streptelasma rusticum var. trilobatum Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 2, 1895, p. 113.

Streptelasma latusculum var. trilobatum Lambe, Cont. Canadian Pal., Geol. Surv. Canada, 4, pt. 2, 1901, p. 115.

Richmond (Stony Mountain): Stony Mountain, Manitoba.

Streptelasma? (Zaphrentis?) limitare Hall.

Streptelasma? (Zaphrentis?) limitare Hall, 35th Rep. New York State Mus. Nat. Hist., 1884, p. 409 (ext., 1882, p. 5).

Niagaran: Racine, Wisconsin.

STREPTELASMA MINIMA Hall. See Duncanella borealis.

Streptelasma obliquius Foerste.
Streptelasma obliquior Foerste, Proc. Boston Soc. Nat. Hist., 24, 1890, p. 346, pl. 9, figs. 14, 15.
Streptelasma obliquius Foerste, Geol. Surv. Ohio, Pal., 7, 1893, p. 601, pl. 34, figs. 14, 15 (loc. occ.).
Upper Medinan (Brassfield): Hanover, Indiana.

Streptelasma(?) parasiticum Ulrich.
Streptelasma (?) parasiticum Ulrich in Winchell and Schuchert, Geol. Minnesota, 3, pt. 1, 1895, p. 89, fig. 6.
Black River (Platteville and Decorah): St. Paul and Minneapolis, Minnesota.
Holotype.—Cat. No. 42557, U.S.N.M.

STREPTELASMA PARVULA Hall. See Streptelasma corniculum.

Streptelasma patula Rominger.
Streptelasma patula Rominger, Geol. Surv. Michigan, 3, pt. 2, 1876, p. 143, pl. 39, fig. 1.
Zaphrentis patula Davis, Kentucky Fossil Corals, Geol. Surv. Kentucky, pt. 2, 1885, pl. 133, figs. 4–6.
Niagaran: Drummonds Island, Lake Huron; Point Detour, Michigan; Masonville, Iowa; Louisville, Kentucky (Louisville).

Streptelasma (Petraia) profundum (Conrad).
Cyathophyllum profundum Conrad, Proc. Acad. Nat. Sci. Philadelphia, 1843, p. 335.—Owen, Geol. Iowa, Wisconsin, and Illinois, 1844, pl. 16, fig. 5.
Streptoplasma profunda Hall, Pal. New York, 1, 1847, p. 49, pl. 12, figs. 4a–d.
Streptelasma profunda Edwards and Haime, Mon. d. Polyp. Foss. d. Terr. Pal. (Arch. du Mus. d'Hist. Nat., 5), 1851, p. 400.—Billings, Canadian Nat. Geol., 1, 1856, p. 123, figs. 7, 8.—Hitchcock, Geol. Vermont, 1, 1861, p. 291.—Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 102.—Winchell and Schuchert, Geol. Minnesota, 3, pt. 1, 1895, p. 88, pl. G, figs. 17–19.—Sardeson, Amer. Geol., 20, 1897, p. 279, pl. 16, figs. 1–8; pl. 17, figs. 1–11.—Grabau and Shimer, N. A. Index Fossils, 1, 1906, p. 54, figs. 76a, b.
Petraia profunda Billings, Canadian Jour., n. s., 4, 1859, p. 120.—Lambe, Cont. Can. Pal., Geol. Surv. Canada, 4, pt. 2, 1901, p. 105, pl. 6, figs. 5a, b.
Black River: Watertown, etc., New York; various localities in the United States and Canada.

STREPTELASMA PULCHELLUM Miller. See Streptelasma selectum.

Streptelasma (Petraia) pygmæum (Billings).
Petraia pygmæa Billings, Pal. Foss., Geol. Surv. Canada, 1865, p. 103, fig. 91 (adv. sheets, 1862); Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 33 (loc. ref.).—Nicholson, Pal. Ontario, 1875, p. 59.—Lambe, Cont. Canadian Pal., Geol. Surv. Canada, 4, pt. 2, 1901, p. 106, pl. 6, figs. 6, 6a, b.
Streptelasma pygmæum Miller, N. A. Geol. Pal., 1889, p. 204 (gen. ref.).
Anticostian (Gun River, Jupiter River): Challoupe River, etc., Anticosti.

Streptelasma pygmæum occidentale (Whiteaves).
Petraia (pygmæa? var.) occidentalis Whiteaves, Geol. Surv. Canada, Pal. Foss., 3, pt. 4, 1906, p. 291, pl. 24, figs. 2–5.
Niagaran: Saskatchewan River, Canada.

Streptelasma radicans Hall.

Streptelasma radicans Hall, 28th Rep. New York State Mus. Nat. Hist., doc. ed., 1877, pl. 5, figs. 1–4; mus. ed., 1879, p. 106, pl. 5, figs. 1–4; 11th Ann. Rep. Indiana Dep. Geol. Nat. Hist., 1882, p. 226, pl. 4, figs. 1–4.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1087, figs.

Zaphrentis radicans Davis, Kentucky Foss. Corals, Geol. Surv. Kentucky, pt. 2, 1885, pl. 132, figs. 11–13.

Niagaran: Waldron, etc., Indiana; Newsom, Tennessee (Waldron); Louisville, Kentucky (Louisville).

Streptelasma robustum Whiteaves.

Streptelasma corniculum? Whiteaves, Geol. Surv. Canada, 1879–80, Rep. Progress, 1881, p. 57c.

Streptelasma robustum Whiteaves, Canadian Rec. Sci., 6, 1895, p. 390; Pal. Foss., Geol. Surv. Canada, 3, pt. 3, 1897, p. 153, pl. 18, figs. 1, 1a.—Lambe, Cont. Canadian Pal., Geol Surv. Canada, 4, pt. 2, 1901, p. 109, pl. 7, fig. 1; Cruise of the "Neptune," App. 4, 1906, p. 325.

Richmond: Red River Valley, Lake Winnipeg, and Southampton Island, Hudson Bay, Canada.

Streptelasma rusticum (Billings).

Petraia rustica Billings, Canadian Nat. Geol., 3, 1858, p. 422; Geol. Surv. Canada, Rep. Progress, 1858, p. 168.

Zaphrentis rustica Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 106.

Streptelasma rusticum Miller, N. A. Geol. Pal., 1889, p. 205.—Whiteaves, Geol. Surv. Canada, Pal. Foss., 3, pt. 2, 1895, p. 113 (loc. occ.).—Winchell and Schuchert, Geol. Minnesota, 3, pt. 1, 1895, p. 93, pl. G, figs. 22, 23.—Lambe, Cont. Canadian Pal., Geol. Surv. Canada, 4, pt. 2, 1901, p. 110, pl. 7, figs. 2, 2a, 3.—Nickles, Amer. Geol., 32, 1903, p. 207.—Whiteaves, Geol. Surv. Canada, Pal. Foss., 3, pt. 4, 1906, p. 342.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 55, fig. 76e–f.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 708, pl. 2, figs. 2, 2b.

Petraia Canadensis Billings, Geol. Canada, Geol. Surv. Canada, 1863, p. 208, fig. 205.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 627, fig.

Zaphrentis Canadensis Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 106, fig. 93a–c (adv. sheets, 1862).—Hall, 35th Rep. New York State Mus., 1884, pl. 16, figs. 1–3.

Streptelasma vagans Foerste, Bull. Sci. Lab. Denison Univ., 14, 1909, p. 305, pl. 11, figs. 1a–c.

Zaphrentis corniculum Davis, Kentucky Foss. Corals, Geol. Surv. Kentucky, pt. 2, 1885, pl. 132, figs. 1–3; pl. 138, fig. 8.

Streptelasma corniculum Edwards and Haime (not Hall), Mon. Poly. Foss. des Terr. Pal., 1851, pl. 7, fig. 4.—Nicholson, Pal. Ohio, 2, 1875, p. 208.—Rominger, Geol. Surv. Michigan, 1876, p. 141, pl. 51, upper row.—Hall, 11th Rep. State Geol. Indiana, 1882, p. 376, pl. 51, figs. 2–4.—Nicholson, Manual of Pal., 1, 1889, p. 247, fig. 127b; pp. 278, 279, figs. 156a–b; p. 280, fig. 157; p. 297, figs. 178a, 178b.

Richmond: Snake Island, Lake St. John, Canada. Widespread and abundant in all divisions of the Richmond in the United States and Canada.

STREPTELASMA RUSTICUM var. TRILOBATUM Whiteaves. See Streptelasma latusculum trilobatum.

Streptelasma selectum (Billings).

Petraia selecta Billings, Canadian Nat. Geol., n. s., 2, 1865, p. 429; Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 7, 33.

Streptelasma selectum—Continued.

Streptelasma selectum Lambe, Cont. Can. Pal., Geol. Surv. Canada, 4, pt. 2, 1901, p. 113, pl. 6, figs. 8, 8a.

Petraia pulchella Billings, Canadian Nat. Geol., n. s., 2, 1865, p. 429; Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 33.

Streptelasma pulchellum Miller, N. A. Geol. Pal., 1889, p. 204 (gen. ref.).

Gamachian (Ellis Bay): Gamache Bay, etc., Anticosti.

Streptelasma spongaxis Rominger.

Streptelasma spongaxis Rominger, Geol. Surv. Michigan, 3, pt. 2, 1876, p. 144, pl. 39, fig. 2.

Zaphrentis spongiaxis Davis, Kentucky Foss. Corals, Geol. Surv. Kentucky, 1885, pt. 2, pl. 132, figs. 4-6.

Niagaran: Point Detour, Michigan; Drummonds Island, Lake Huron; Masonville, Iowa; Louisville, Kentucky (Louisville); Laurel, Indiana (Laurel).

STREPTELASMA VAGANS Foerste. See Streptelasma rusticum.

STREPTELASMA WAYNENSE Miller. See Enterolasma waynense.

STREPTIS Davidson. Genotype: Terebratula grayi Davidson.

Streptis Davidson, Geol. Mag., 8, 1881, p. 150, pl. 5, fig. 13.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 274; 11th Ann. Rep. New York State Geol., 1894, p. 289.—Schuchert, Zittel-Eastman Textb. Pal., 1, 1900, p. 315; ibid., 2d ed., 1913, p. 388.

Streptis grayi (Davidson).

Terebratula grayii Davidson, Bull. Soc. Geol. France, 2d ser., 5, 1848, p. 331, pl. 3, fig. 33.

Atrypa? grayi Davidson, British Sil. Brach., Pal. Soc., 1866, 1867, p. 141, pl. 13, figs. 14-22.

Streptis Grayi Davidson, Mon. British Foss. Brachiopoda, 5, 1883, Sil. Suppl., Pal. Soc., p. 139.—Williams, Amer. Jour. Sci., 3d ser., 48, 1894, p. 331.

Silurian: England; Batesville, Arkansas (St. Clair.)

STREPTIS WALDRONENSIS Beecher and Clarke. See Mimulus waldronensis.

STREPTOCERAS Billings. Genotype: S. janus Billings.

Streptoceras Billings, Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 88.—Hyatt, Proc. Boston Soc. Nat. Hist., 22, 1884, p. 281.—Miller, N. A. Geol. Pal., 1889, p. 454.—Hyatt, Zittel-Eastman Textb. Pal., 1, 1900, p. 531, ibid., 2d ed., 1913, p. 611.

Streptoceras heros Billings.

Streptoceras heros Billings, Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 89, fig. 28, lower.

Niagaran (Lockport): Grimsby, Ontario.

Streptoceras janus Billings.

Streptoceras Janus Billings, Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 88, fig. 28, upper.—Miller, N. A. Geol. Pal., 1889, p. 454, text fig. 760.

Niagaran (Lockport): Grimsby, Ontario.

STREPTOLASMA D'Orbigny. See Streptelasma Hall.

STREPTOMYTILUS Kindle and Breger.

Genotype: S. wabashensis Kindle and Breger.

Streptomytilus Kindle and Breger, 28th Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1904, p. 453.

Streptomytilus aphæa (Hall).
Ambonychia Aphæa Hall, 20th Rep. New York State Cab. Nat. Hist., 1868 (extras, 1865), p. 336, pl. 14 (5), fig. 3; p. 38b; rev. ed., 1870, p. 383, pl. 14, fig. 3.—Winchell and Marcy, Mem. Boston Soc. Nat. Hist., 1, 1865, p. 108.
Streptomytilus aphæa Kindle and Breger, 28th Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1904, p. 452 (gen. ref.).
Niagaran (Racine): Wauwatosa, Wisconsin; Bridgeport, Illinois.
Observation.—See S. pernoides Whiteaves for a possible synonym.

Streptomytilus eduliformis (Clarke and Ruedemann).
Mytilarca eduliformis Clarke and Ruedemann, Mem. New York State Mus., 5, 1903, p. 47, pl. 5, figs. 8-10.
Streptomytilus eduliformis Kindle and Breger, 28th Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1904, p. 452 (gen. ref.).
Niagaran (Guelph): Rochester, New York.

Streptomytilus pernoides (Whiteaves).
Mytilarca pernoides Whiteaves, Geol. Surv. Canada, Ann. Rep., n. s., 14, App. F, 1904, p. 47; Geol. Surv. Canada, Pal. Foss., 3, pt. 4, 1906, p. 255, pl. 27, fig. 8.
Niagaran: Ekwan River, Canada.
Observation.—Probably a synonym of S. aphæa (Hall).

Streptomytilus wabashensis Kindle and Breger.
Streptomytilus wabashensis Kindle and Breger, 28th Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1904, p. 452, pl. 10, figs. 11, 12.
Niagaran: Wabash, Indiana.

STREPTOPLASMA Hall. See Streptelasma Hall.

STREPTOPLASMA CRASSA Hall. See Streptelasma corniculum.

STREPTOPLASMA MULTILAMELLOSA Hall. See Streptelasma corniculum.

STREPTOPLASMA PARVULA Hall. See Streptelasma corniculum.

STREPTORHYNCHUS AMERICANUS Miller. See Clitambonites diversus.

STREPTORHYNCHUS APPROXIMATA James. See Strophomena vetusta approximata.

STREPTORHYNCHUS CARDINALE Whitfield. See Strophomena cardinalis.

STREPTORHYNCHUS CONVEXUM Sardeson. See Strophomena incurvata.

STREPTORHYNCHUS DEFLECTUM Miller. See Dinorthis (Plæsiomys) deflecta.

STREPTORHYNCHUS (STROPHONELLA) DELTOIDEA Hall. See Rafinesquina deltoidea and Strophomena winchelli.

STREPTORHYNCHUS (STROPHOMENA) ELONGATA James. See Strophomena planumbona elongata.

STREPTORHYNCHUS ELONGATA Mickelborough and Wetherby. See Strophomena rugosa.

STREPTORHYNCHUS FILITEXTA Hall. See Strophomena incurvata and S. neglecta.

STREPTORHYNCHUS HALLANUM Miller. See Strophomena hallie.

STREPTORHYNCHUS(?) HALLIE Miller. See Strophomena hallie.

STREPTORHYNCHUS HEMIASTER Winchell and Marcy. See Schuchertella subplana.

STREPTORHYNCHUS HYDRAULICUM Whitfield. See Schuchertella hydraulica.

STREPTORHYNCHUS MINOR Walcott. See Strophomena(?) minor.

STREPTORHYNCHUS NEGLECTA James. See Strophomena neglecta.

STREPTORHYNCHUS NUTANS Miller. See Strophomena nutans.

STREPTORHYNCHUS PATENTA Hall. See Strophonella patenta.

STREPTORHYNCHUS PLANOCONVEXA Miller. See Strophomena planoconvexa.

STREPTORHYNCHUS PLANUMBONUM of authors. See Strophomena planumbona.

STREPTORHYNCHUS? PRIMORDIALE Whitfield. See Billingsella(?) primordialis.

STREPTORHYNCHUS RECTUS Miller. See Dinorthis (Plæsiomys) deflecta.

STREPTORHYNCHUS SINUATUM Lesley. See Strophomena sinuata.

STREPTORHYNCHUS (STROPHOMENA) SUBPLANA Hall. See Schuchertella subplana.

STREPTORHYNCHUS SUBSULCATUM Sardeson. See Strophomena scofieldi.

STREPTORHYNCHUS SUBTENTA Hall. See Strophomena trentonensis.

STREPTORHYNCHUS SUBTENTUM Lesley. See Strophomena planumbona.

STREPTORHYNCHUS SULCATUS Hall. See Strophomena sulcata.

STREPTORHYNCHUS TENUIS Hall. See Schuchertella tenuis.

STREPTORHYNCHUS (STROPHOMENA) VETUSTA James. See Strophomena vetusta.

STREPTOSOLEN Ulrich and Everett. Genotype: S. obconicus Ulrich and Everett.
Streptosolen Miller, N. A. Geol. Pal., 1889, p. 165 (Ulrich and Everett in press).—Ulrich and Everett, Geol. Surv. Illinois, 8, 1890, p. 273.

Streptosolen obconicus Ulrich and Everett.
Streptosolen obconicus Ulrich and Everett, Geol. Surv. Illinois, 8, 1890, p. 274, pl. 4, figs. 4, 4a, b.
Black River (Platteville): Near Dixon, Illinois.

STREPTOSPONGIA Ulrich. Genotype: S. labyrinthica Ulrich.
Streptospongia Ulrich, Amer. Geol., 3, 1889, p. 235, 244.—Miller, N. A. Geol. Pal., 1889, p. 165.

Streptospongia labyrinthica Ulrich.
Streptospongia labyrinthica Ulrich, Amer. Geol., 3, 1889, p. 244, fig. 8, p. 236.
Girvanella labyrinthica James, J. F., Jour. Cincinnati Soc. Nat. Hist., 14, pt. 1, 1891, p. 51.
Richmond (Arnheim): Near Lebanon, Kentucky.
Holotype.—Cat. No. 46572, U.S.N.M.

STREPTOTROCHUS Perner. Genotype: S. rugulosus Barrande.
Streptotrochus Perner, Syst. Sil. du Centre Boheme, pt. 1, 4, Gasteropoden, 2, 1907, p. 238.—Williams, Proc. U. S. Nat. Mus., 42, 1912, p. 394.

Streptotrochus carinatus Williams.
Streptotrochus carinatus Williams, Proc. U. S. Nat. Mus., 42, 1912, p. 395, pl. 50, fig. 8.
Silurian (Eastport): West side of Shackford Head, Moose Island, Eastport, Maine.
Holotype.—Cat. No. 58444, U.S.N.M.

Streptotrochus ione Williams.

Streptotrochus ione Williams, Proc. U. S. Nat. Mus., 42, 1912, p. 395, pl. 50, fig. 13.

Silurian (Eastport): West side of Shackford Head, Moose Island, Eastport, Maine.

Holotype.—Cat. No. 58447, U.S.N.M.

Streptotrochus regularis Williams.

Streptotrochus regularis Williams, Proc. U. S. Nat. Mus., 42, 1912, p. 395, pl. 50, fig. 12.

Silurian (Eastport): West side of Shackford Head, Moose Island, Eastport, Maine.

Holotype.—Cat. No. 58446, U.S.N.M.

Streptotrochus sulcatus Williams.

Streptotrochus sulcatus Williams, Proc. U. S. Nat. Mus., 42, 1912, p. 396, pl. 50, fig. 9.

Silurian (Eastport): West side of Shackford Head, Moose Island, Eastport, Maine.

Holotype.—Cat. No. 58445, U.S.N.M.

STREPULA Jones and Holl. Genotype: S. concentrica Jones and Holl.

Strepula Jones and Holl, Ann. Mag. Nat. Hist., 5th ser., 17, 1886, p. 403.—Krause, Zeits. d. d. geol. Gesell., 41, 1889, p. 15.—Miller, N. A. Geol. Pal., 1st App., 1892, p. 711.—Koken, Die Leitfossilien, Leipzig, 1896, p. 40.—Grabau, Bull. Buffalo Soc. Nat. Sci., 6, 1899, p. 305.—Bonnena, Mitt. Min. Geol. Inst. Groningen, 2, 1909, p. 48.

Strepula irregularis Jones and Holl.

Strepula irregularis Jones and Holl, Ann. Mag. Nat. Hist., 5th ser., 17, 1886, p. 404, pl. 13, figs. 5, 7, 8, 9, 15.—Ulrich and Bassler, Maryland Geol. Surv., Low. Dev., 1913, p. 519, pl. 95, figs. 12–15.

Silurian (Wenlock): England.

Helderbergian (Keyser): Cumberland, Maryland.

Plesiotypes.—Cat. No. 53281, U.S.N.M.

STREPULA LUNATIFERA Ulrich. See Tetradella lunatifera.

STREPULA QUADRILIRATA Ulrich. See Tetradella quadrilirata.

STRIATOPORA Hall. Genotype: S. flexuosa Hall.

Striatopora Hall, Amer. Jour. Sci. Arts, 2d ser., 1851, p. 400; Rep. Geol. Surv. Iowa, 1, pt. 2, 1858, p. 478.—Billings, Canadian Jour., n. s., 5, 1860, p. 253.—Rominger, Amer. Jour. Sci. Arts, 2d ser., 34, 1862, p. 391.—Meek and Worthen, Geol. Surv. Illinois, 3, 1868, p. 368.—Nicholson, Rep. Pal. Prov. Ontario, pt. 1, 1874, p. 58.—Rominger, Geol. Surv. Illinois, 3, pt. 2, 1876, p. 58.—Nicholson, Tab. Corals Pal. Period, 1879, p. 97.—Zittel, Handb. Pal., 1, 1879, p. 237.—Roemer, Leth. geog., pt. 1, Leth. Pal., 1883, p. 439.—Hall and Simpson, Pal. New York, 6, 1887, p. 12.—Miller, N. A. Geol. Pal., 1889, p. 205.—Beecher, Trans. Connecticut Acad. Arts Sci., 8, 1891, pp. 209, 211.—Sardeson, Neues Jahrb. Min., Geol. and Pal., Beilage-Band, 10, 1896, p. 304, p. 252.—Lambe, Cont. Can. Pal., Geol. Surv. Canada, 4, pt. 1, 1899, p. 40.—Grabau, Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 147; Bull. New York State Mus., 45, 1901, p. 147.—Grabau and Shimer, N. A. Index Fossils, 1, 1906, p. 94; Zittel-Eastman Textb. Pal., 1900, p. 100; 2d ed., 1913, p. 114.

Striatopora flexuosa Hall.
Striatopora flexuosa Hall, Pal. New York, 2, 1852, p. 156.—Pictet, Traite de Pal., 2d ed., 4, 1857, p. 170, pl. 92, fig. 21.—Nicholson, Rep. Pal. Prov. Ontario, pt. 2, 1875, p. 55, fig. 26; Tab. Corals Pal. Period, 1879, p. 98, fig. 18.—Roemer, Leth. geog., pt. 1, Leth. Pal., 1883, p. 440, fig. 105.—Lambe, Cont. Canadian Pal., Geol. Surv. Canada, 4, pt. 1, 1899, p. 40.—Grabau, Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 148, fig. 45; Bull. New York State Mus., 45, 1901, p. 148, fig. 45.—Grabau and Shimer, N. A. Index Fossils, 1, 1906, p. 94, fig. 151.
Clinton: Lockport, etc., New York; Grimsby, etc., Ontario (Rochester); Osgood, Indiana (Osgood).

triatopora gorbyi Miller.
Striatopora gorbyi Miller, 18th Ann. Rep. Geol. Nat. Res. Indiana, 1894, p. 261, pl. 8, fig. 1 (adv. sheets, 1892).
Niagaran (Laurel): St. Paul, Indiana.

triatopora huronensis Rominger.
Striatopora huronensis Rominger, Geol. Surv. Michigan, 3, pt. 2, 1876, p. 58, pl. 24, fig. 2.—Davis, Kentucky Fossil Corals, Geol. Surv. Kentucky, pt. 2, 1885, pl. 51, fig. 3; pl. 64, figs. 5, 6.
Niagaran: Point Detour, Lake Huron, Michigan; Louisville, Kentucky (Louisville).

triatopora (Cladopora?) proboscidialis Foerste.
Striatopora (Cladopora?) proboscidialis Foerste, Proc. Boston Soc. Nat. Hist., 24, 1890, p. 337.
Upper Medinan (Brassfield): Fair Haven and Ludlow Falls, Ohio.

TRIBALOCYSTITES Miller. Genotype: S. tumidus Miller.
Stribalocystites Miller, 17th Rep. Geol. Surv. Indiana, 1892, p. 630 (adv. sheets, 1871); N. A. Geol. Pal., 1st App., 1892, p. 682.—Jaekel, Stammesges. Pelmat., 1, 1899, p. 312.—Bather, Treatise on Zool. (Lankester), pt. 3, 1900, p. 67.

tribalocystites? elongatus (Rowley).
Stribalocystis? elongatus Rowley, Amer. Geol., 34, 1904, p. 273, pl. 16, fig. 25, 26.
Niagaran or Helderbergian: Red Rock Landing, Perry County, Missouri.

tribalocystites gorbyi Miller.
Stribalocystites gorbyi Miller, 18th Ann. Rep. Indiana Dep. Geol. Nat. Res., 1894, p. 265, pl. 2, figs. 3-8 (adv. sheets, 1892); N. A. Geol. Pal., 1st App., 1892, p. 682, fig. 1249.—Jaekel, Stammesg. Pelmat., 1, Thecoidea u. Cystoidea, Berlin, 1899, p. 312.
Niagaran (Laurel): St. Paul, Indiana.

tribalocystites missouriensis (Rowley).
Stribalocystis missouriensis Rowley, Amer. Geol., 25, 1900, p. 71, pl. 2, figs. 40, 41; ibid., 34, p. 273, pl. 16, figs. 23, 24.
Niagaran (Bainbridge): Near St. Marys, Ste. Genevieve County, Missouri.

tribalocystites sphæroidalis Miller and Gurley.
Stribalocystites sphæroidalis Miller and Gurley, Bull. Illinois State Mus. Nat. Hist., 6, 1895, p. 58, pl. 5, figs. 19-21.—Miller, N. A. Geol. Pal., 2d App., p. 753, fig. 1397.
Niagaran (Laurel): St. Paul, Indiana.

Stribalocystites tumidus Miller.

Stribalocystites tumidus Miller, 17th Ann. Rep. Indiana Dep. Geol. Nat. Res., 1892, p. 630, pl. 6, figs. 33, 34 (adv. sheets, 1891, p. 20); N. A. Geol. Pal., 1st App., p. 682, fig. 1250.—Jaekel, Stammesg. Pelmat., 1, Thecoidea u. Cystoidea, Berlin, 1899, p. 313.

Niagaran (Laurel): St. Paul, Indiana.

STRICKLANDIA Billings. See Stricklandinia Billings.

STRICKLANDIA? ARACHNE Billings. See Syntrophia arachne.

STRICKLANDINIA Billings. Genotype: Stricklandia gaspensis Billings.

Stricklandia Billings, Canadian Nat. and Geol., 4, 1859, p. 132; Canadian Jour., 6, 1861, p. 265; Pal. Fossils, 1, 1865, p. 84; Proc. Portland Soc. Nat. Hist., 1863, p. 114.—Waagen, Pal. Indica, 13th ser., 1, 1883, p. 412.

Stricklandinia Billings, Canadian Nat. and Geol., 8, 1863, p. 370.—Hall, 20th Rep. New York State Cab. Nat. Hist., 1867, p. 160; Pal. New York, 4, 1867, p. 369.—Billings, Pal. Fossils, 2, 1874, p. 78.—Nettelroth, Kentucky Fossil Shells, Mem. Kentucky Geol. Surv., 1889, p. 64.—Miller, N. A. Geol. Pal., 1889, p. 379.—Hall and Clarke, Pal. New York, 8, pt. 2, 1893, p. 249; 13th Ann. Rep. New York State Geologist, 1895, p. 847.—Schuchert, Zittel-Eastman Textb. Pal., 1, 1900, p. 321; 2d ed., 1913, p. 395.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 274.

Stricklandinia anticostiensis (Billings?) Hall and Clarke.

Stricklandinia anticostiensis (Billings?) Hall and Clarke, Pal. New York, 8, pt. 2, 1893, p. 251, pl. 73, figs. 12-14.

Anticostian: Island of Anticosti.

STRICKLANDINIA ARETHUSA Billings. See Syntrophia arethusa.

Stricklandinia billingsiana Dawson.

Stricklandinia billingsiana Dawson, Canadian Nat. and Geol., 2d ser., 9, 1880, p. 341.

Silurian: Pictou, Nova Scotia.

Stricklandinia brevis (Billings).

?Spirifer species? Hall, Pal. New York, 2, 1852, p. 66, pl. 22, fig. 3.

Stricklandia brevis Billings, Canadian Nat. and Geol., 4, 1859, p. 135.

Stricklandinia brevis Billings, Pal. Fossils, 2, 1874, p. 84, pl. 6, fig. 2.—Hall and Clarke, Pal. New York, 8, pt. 2, 1893, p. 251.

Anticostian (Gun River, Jupiter River): Southwest Point, etc., Anticosti.

Stricklandinia canadensis (Billings).

Stricklandia canadensis Billings, Canadian Nat. and Geol., 4, 1859, p. 135.

Stricklandinia canadensis Billings, Pal. Fossils, 2, 1874, p. 81; pl. 6, fig. 3; pl. 7, fig. 2.—Hall and Clarke, Pal. New York, 8, pt. 2, 1893, p. 251.

Lower Clinton: Near Thorold, Ontario.

Stricklandinia castellana White.

Stricklandinia castellana White, Proc. Acad. Nat. Sci. Philadelphia, 1876, p. 30.—Hall and Clarke, Pal. New York, 8, pt. 2, 1893, p. 251, pl. 73, figs. 3-7.—Weller and Davidson, Jour. Geol., 4, 1896, p. 173.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 275, fig. 333.

Niagaran: Castle Grove, Jones County, Iowa.

tricklandinia chapmani Hall and Clarke.
Stricklandinia chapmani Hall and Clarke, Pal. New York, 8, pt. 2, 1895, pl. 83, fig. 40.
Niagaran: Hamilton, Ontario.

tricklandinia davidsoni Billings.
Stricklandinia davidsoni Billings, Geol. Mag., 5, 1868, p. 59, pl. 4, figs. 1–1d; Pal. Fossils, 2. 1874, p. 86, pl. 6, fig. 1, p. 80, figs. 46, 47.—White, Proc. U. S. Nat. Mus., 3, 1880, p. 48.—Hall and Clarke, Pal. New York, 8, pt. 2, 1893, p. 251, pl. 73, fig. 15.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 274.
Stricklandinia lens Billings (not Atrypa lens Sowerby), Cat. Sil. Foss. Anticosti, 1866, p. 45.—Foerste, Proc. Boston Soc. Nat. Hist., 24, 1890, p. 321, pl. 5, figs. 1–4.
Anticostian (Gun River–Chicotte): Southwest Point, The Jumpers, etc., Anticosti.
?Clinton: Ringgold, Catoosa County, Georgia.

tricklandinia deformis Meek and Worthen.
Stricklandinia deformis Meek and Worthen, Proc. Acad. Nat. Sci. Philadelphia, 1870, p. 37; Geol. Surv. Illinois, 6, 1875, p. 502, pl. 24, fig. 5.—Hall and Clarke, Pal. New York, 8, pt. 2, 1893, p. 251, pl. 73, figs. 8–10.
Niagaran: Carroll County, Illinois.

tricklandinia(?) dichotoma Foerste.
Stricklandinia(?) dichotoma Foerste, Jour. Geol., 11, 1903, p. 707; Bull. Sci. Lab. Denison Univ., 14, 1909, p. 71, pl. 1, figs. 2A, B.
Upper Medinan (Brassfield): Riverside and Iron City, Tennessee.

tricklandinia gaspiensis (Billings).
Stricklandia gaspiensis Billings, Canadian Nat. and Geol., 4, 1859, p. 134.
Stricklandinia gaspiensis Billings, Geol. Surv. Canada, Pal. Foss., 2, 1874, p. 83, fig. 49, pt. 6, fig. 4a.—Hall and Clarke, Pal. New York, 8, pt. 2, 1893, p. 251, pl. 73, fig. 11.
Silurian: Bay of Chaleurs, Quebec.

TRICKLANDINIA LENS Billings. See Stricklandinia davidsoni.

tricklandinia lirata (Sowerby).
Spirifer liratus Sowerby, Murchison's Silurian System, 1839, pl. 22, fig. 6.
Stricklandinia lirata Davidson, Mon. British Sil. Brach., Pal. Soc., 1867, p. 159, pl. 20, figs. 1–13.—Billings, Cat. Sil. Foss. Anticosti, 1866, p. 45; Pal. Foss., Geol. Surv. Canada, 2, pt. 1, 1874, pl. 6, fig. 4.
Silurian: Europe; East Point, The Jumpers, etc., Anticosti (Gun River-Jupiter River).

tricklandinia(?) louisvillensis Nettelroth.
Stricklandinia louisvillensis Nettelroth, Kentucky Fossil Shells, Mem. Kentucky Geol. Surv., 1889, p. 65, pl. 34, figs. 31–34.
Niagaran (Louisville): East of Louisville, Kentucky.
Holotype.—Cat. No. 51319, U.S.N.M.

tricklandinia melissa Billings.
Stricklandinia melissa Billings, Pal. Fossils, 2, 1874, p. 89, pl. 7, fig. 4.—Hall and Clarke, Pal. New York, 8, pt. 2, 1893, p. 251.—Foerste, Proc. Boston Soc. Nat. Hist., 24, 1889, p. 323.
Anticostian (Jupiter River): Southwest Point, Anticosti.

Stricklandinia multilirata Whitfield.

Stricklandinia multilirata Whitfield, Ann. Rep. Geol. Surv. Wisconsin, 1877, p. 81; Geol. Wisconsin, 4, 1882, p. 315, pl. 23, figs. 3–5.—Hall and Clarke, Pal. New York, 8, pt. 2, 1893, p. 251, pl. 73, figs. 1, 2.

Niagaran (Guelph): Sheboygan, Wisconsin.

Stricklandinia norwoodi Foerste.

Stricklandinia norwoodi Foerste, Bull. Kentucky Geol. Surv., 7, 1906, p. 324, pl. 1, figs. 1a–d.

Clinton (Oldham): Five and one-half miles south of Indian Fields, etc., Kentucky.

Stricklandinia salteri Billings.

Stricklandinia salteri Billings, Geol. Mag., 5, 1868, p. 61, pl. 4, figs. 2–2a; Pal. Fossils, 2, 1874, p. 87, pl. 7, fig. 1.—White, Proc. U. S. Nat. Mus., 3, 1880, p. 48.—Hall and Clarke, Pal. New York, 8, pt. 2, 1893, p. 251.

Anticostian (Gun River, Jupiter River): Heath Point and Cormorant Point, Anticosti.

Stricklandinia triplesiana Foerste.

Stricklandinia triplesiana Foerste, Bull. Sci. Lab. Denison Univ., 1, 1885, p. 89, pl. 14, figs. 13, 14.; Proc. Boston Soc. Nat. Hist., 24, 1890, p. 323; Geol. Ohio, 7, 1895, p. 594, pl. 26, figs. 13, 14.

Upper Medinan (Brassfield): Dayton, Ohio.

STROBILOSPONGIA Beecher. See Pattersonia Miller.

STROMATOCERIUM Hall. Genotype: S. rugosum Hall.

Stromatocerium Hall, Pal. New York, 1, 1847, p. 48.—Winchell, Proc. Amer. Assoc. Adv. Sci., 15, 1867, p. 93.—Nicholson and Murie, Jour. Linnean Soc. London, Zool., 14, 1878, p. 189, 222.—Zittel, Handb. Pal., 1, 1879, p. 287.—Roemer, Leth. geog., pt. 1, Leth. Pal., 1883, p. 535.—Nicholson, Mon. British Strom., Pal. Soc., 1886, p. 8, 17.—James, J. F., Jour. Cincinnati Soc. Nat. Hist., 9, 1886, p. 252; 1892, p. 93.—Miller, N. A. Geol. Pal., 1889, p. 165.—Grabau and Shimer, N. A. Index Fossils, 1, 1906, p. 46.—Parks, Univ. Toronto Studies, Geol. Series, No. 7, 1910, p. 8.

Stromatocerium canadense Nicholson and Murie.

Stromatocerium canadense Nicholson and Murie, Jour. Linn. Soc. Zool., 14, 1878, p. 223, pl. 3, figs. 9, 10.—James, Jour. Cincinnati Soc. Nat. Hist., 15, 1892, p. 93; ibid., 9, 1886, p. 252.—Parks, Univ. Toronto Studies, Geol. Series, No. 7, 1910, p. 15, pl. 21, figs. 8, 9; pl. 22, figs. 1–3.

Labechia canadense Nicholson, Mon. British Strom., 1886, p. 32, pl. 2, figs. 3–5; Ann. Mag. Nat. Hist., 5th ser., 18, 1886, p. 14, pl. 2, fig. 5; Mon. British Strom., 1891, p. 163, pl. 20, fig. 9.—Whiteaves, Can. Rec. Sci., 7, 1897, p. 131.

Black River: Peterborough, Pauquettes Rapids, etc., Canada; Kentucky; Tennessee.

Plesiotype.—Cat. No. 49502, U.S.N.M.

STROMATOCERIUM CANADENSE var. MINIMUM Parks. See Stromatocerium pustulosum.

Stromatocerium eatoni Seely.

Stromatocerium Eatoni Seely, Rep. Vermont State Geol., 4, 1904, p. 146, pl. 71, pl. 74, fig. 2.—Grabau and Shimer, N. A. Index Fossils, 1, 1906, p. 46.

Chazyan: Isle La Motte, Vermont (Crown Point, Valcour).

Stromatocerium huronense (Billings).

Stenopora Huronensis Billings, Geol. Surv. Canada, Pal. Foss., 1, 1865, p. 185.

Tetradium huronense Foord (part), Contr. Canadian Cambro-Sil. Micropal., 1883, p. 25, pl. 7, figs. 1, 1a.

Labechia huronensis Whiteaves, Canadian Rec. Sci., 7, 1897, p. 131.—Lambe, Ottawa Nat., 13, 1899, p. 170.

Stromatocerium huronense Parks, Univ. Toronto Studies, Geol. Ser., No. 7, 1910, p. 20, pl. 22, figs. 4–10; pl. 23, fig. 5.

Alveolites granulosus James, Cat. Foss. Cincinnati Group, 1872, p. 2; Jour. Cincinnati Soc. Nat. Hist., 15, 1892, p. 148, fig. 9a–c.

Labechia ohioensis Nicholson, Mon. British Strom., 1885, p. 32, pl. 1, figs. 1, 2, footnote; Ann. Mag. Nat. Hist., 5th ser., 18, 1886, p. 13, pl. 2, figs. 1, 2.—Grabau and Shimer, N. A. Index Fossils, 1, 1906, p. 46, fig. 73.

Richmond: Cape Smyth, etc., Ontario; Ohio; Indiana; Kentucky.

Stromatocerium huronense australe Parks.

Stromatocerium huronense var. australe Parks, Univ. Toronto Studies, Geol. Series, No. 7, 1910, p. 24, pl. 22, fig. 11.

Richmond: Near Lebanon, and Jefferson County, Kentucky.

Maysville (Leipers): Nashville, Tennessee.

Holotype.—Cat. No. 49507, U.S.N.M.

Stromatocerium lamottense Seely.

Stromatocerium lamottense Seely, Rep. Vermont State Geol., 4, 1904, p. 147, pl. 69; pl. 72; pl. 74, fig. 1.

Chazyan (Crown Point, Valcour): Isle La Motte, Vermont.

Stromatocerium lamottense chazianum Seely.

Stromatocerium lamottense var. chazianum Seely, Rep. Vermont State Geol., 4, 1904, p. 148, pl. 73, upper fig.

Chazyan (Crown Point, Valcour): Basin Harbor, Appletree Point, and South Hero, Vermont; Chazy, New York.

Stromatocerium michiganense Parks.

Stromatocerium michiganense Parks, Univ. Toronto Studies; Geol. Series, No. 7, 1910, p. 9, pl. 21, figs. 1, 2.

Lower Trenton: Ann Arbor, Michigan (Drift).

Holotype.—Cat. No. 56834, U.S.N.M.

Stromatocerium? moniliferum Seely.

Stromatocerium? moniliferum Seely, Rep. Vermont State Geol., 4, 1904, p. 149, pl. 73, lower fig.; pl. 74, figs. 3, 4.

Chazyan (Crown Point, Valcour): Isle La Motte, Vermont.

Stromatocerium montiferum (Ulrich).

Labechia montifera Ulrich, Contr. to Amer., Pal., 1, 1886, p. 33, pl. 2, figs. 9, 9a.—Cumings, 32d Ann. Rep. Dep. Geol. Res. Indiana, 1907, p. 704, pl. 1, figs. 2–2b.

Richmond (Whitewater—Saluda): Madison, Indiana.

Stromatocerium pustulosum (Safford).

Stromatopora pustolosa Safford, Geol. Tennessee, 1869, p. 285.

Stromatocerium postulosum Hayes and Ulrich, U. S. Geol. Surv., Folio 95, 1903, illustr. sheet, figs. 23, 24.

Stromatocerium canadense var. minimum Parks, Univ. Toronto Studies, Geol. Ser., No. 7, 1910, p. 20, pl. 22, fig. 3.

Stromatocerium pustulosum—Continued.

Trenton: Nashville and many other localities in Tennessee (Bigby, Catheys); various localities in Kentucky (Bigby—Cynthiana).

Plesiotypes.—Cat. Nos. 35406, 36930, U.S.N.M.

STROMATOCERIUM RICHMONDENSE Miller. See Girvanella richmondensis.

Stromatocerium rugosum Hall.

Stromatocerium rugosum Hall, Pal. New York, 1, 1847, p. 48, pl. 12, figs. 2, 2a, b.—Billings, Canadian Nat. Geol., 1, 1856, p. 127, figs. 14, 15.—Hitchcock, Geol. Vermont, 1, 1861, p. 290, fig. 190.—Chapman, Canadian Jour., n. s., 6, 1861, p. 508, fig. 72; Expos. Min. Geol. Canada, 1864, p. 102, fig. 72.—Rominger, Proc. Acad. Nat. Sci. Philadelphia, 1866, p. 118.—Nicholson and Murie, Jour. Linn. Soc. Zool., 14, 1878, p. 223.—Nicholson, Mon. British Strom., 1886, p. 83.—Roemer, Leth. Pal., 1880, p. 535.—Miller, N. A. Geol. Pal., 1889, p. 165, fig. 123.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 1102, fig.—Whiteaves, Canadian Rec. Sci., 7, 1897, p. 143.—Seely, Rep. Vermont State Geol., 1904, p. 144, pl. 74, fig. 5; pl. 70.—Grabau and Shimer, N. A. Index Fossils, 1, 1906, p. 46.—Parks, Univ. Toronto Studies, Geol. Series, No. 7, 1910, p. 11, pl. 21, fig. 3–7.

Stromatopora rugosa D'Orbigny, Prodr. de Pal., 1, 1849, p. 26 (gen. ref.).—Chapman, Canadian Jour., n. s., 8, 1863, p. 197, fig. 169.—Billings, Geol. Surv. Canada, Rep. Progr. to 1863, 1863, p. 140, fig. 72; Geol. Surv. Canada, Pal. Foss., 1, 1865, p. 213; Geol. Canada, 1863, p. 140, fig. 72.—Nicholson and Murie, Jour. Linn. Soc. London, Zool., 14, 1878, p. 195, fig. 1.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1108, fig.

Black River: Watertown, etc., New York; Lake Champlain area; Pauquettes Rapids, etc., Canada; Kentucky; Tennessee; etc.

Observation.—See Labechia macrostyla Parks for a possible synonym.

STROMATOPORA Goldfuss. Genotype: S. concentrica Goldfuss.

Stromatopora Goldfuss, Petref. German, 1826, p. 22.—Nicholson, Ann. Mag. Nat. Hist., 4th ser., 4, 13, 1874, p. 4; Geol. Surv. Ohio Pal., 2, 1875, pp. 245, 246.—Carter, Ann. Mag. Nat. Hist., 4th ser., 19, 1877, p. 67.—Dawson, ibid., 2, 1878, p. 28.—Carter, ibid., 2, 1878, p. 85, 304, 314; ibid., 4, 1879, pp. 101, 254.—Nicholson and Murie, Jour. Linn. Soc. London, Zool., 14, 1878, pp. 187, 195, 217.—Steinmann, Palæontographica, 25, 1878, p. 113.—Zittel, Handb. Pal., 1, 1879, p. 285.—Dawson, Quart. Jour. Geol. Soc. London, 35, 1879, p. 55.—Roemer, Leth. geog., pt. 1, Leth. Pal., 1883, p. 529, 536.—Bargatsky, Ann. Soc. Geol. du Nord., Lille, 9, 1883, p. 127.—Walcott, Mon. U. S. Geol. Surv., 8, 1884, p. 100.—Spencer, Bull. Mus. Univ. State Missouri, 1, 1884, p. 44; Trans. Acad. Sci. St. Louis, 4, 1884, p. 594.—Maurer, Abhandl. d. geol. Landes, 1, Heft 2, 1885, p. 107.—Frech, Zeits. d. Deutschen geol. Gesell., 37, 1885, p. 115.—James, J. F., Jour. Cincinnati Soc. Nat. Hist., 1886, pp. 250, 246.—Nicholson, Mon. British Strom. Pal. Soc., 1886, pp. 2, 11, 91; ibid., 1892, p. 219.—Waagen and Wentzel, Mem. Geol. Surv. Indica, Pal. Indica, 13th ser., 1, 1888, p. 943.—Miller, N. A. Geol. Pal., 1889, p. 165.—James, J. F., Jour. Cincinnati Soc. Nat. Hist., 15, pt. 3, 1892, pp. 88, 89.—Pocta, Syst. Sil. Centre Boheme, 8, pt. 1, 1894, p. 156; Zittel-Eastman Pal., 1, 1900, p. 112.—Grabau, Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 134; Bull. New York State Mus., 9, 1901, p. 134.—Grabau and Shimer, N. A. Index Fossils, 1, 1906, p. 44.—Parks, Univ. Toronto Studies, Geol. Series, No. 4, 1907, p. 25; ibid., No. 5, 1908, p. 44; ibid., No. 6, 1909, p. 20; Zittel-Eastman Textb. Pal., 2d ed., 1913, p. 123.

Pachystroma Nicholson and Murie, Jour. Linn. Soc. London, zool., 14, 1878, pp. 214, 223.—Nicholson, Mon. British Strom. Pal. Soc., 1886, pp. 17, 91.

Stromatopora amii Parks.
Stromatopora amii Parks, Univ. Toronto Studies, Geol. Series, No. 6, 1909, p. 36, pl. 19, figs. 7, 8.
Niagaran: Southampton Island, Hudson Bay, Canada.

Stromatopora antiqua (Nicholson and Murie).
Pachystroma antiqua Nicholson and Murie, Jour. Linn. Soc. Zool., 14, 1879, p. 224, pl. 4, figs. 2–5.
Stromatopora antiqua Nicholson, Mon. British Strom., pt. 1, 1886, p. 17, pl. 5, figs. 8–11; Ann. Mag. Nat. Hist., 1891, p. 310, pls. 8–10, figs. 9–11.—Whiteaves, Pal. Foss., 3, pt. 2, 1895, p. 53; Canadian Rec. Sci., 7, 1896, p. 136; Pal. Foss., 3, pt. 4, 1906, p. 328.—Grabau and Shimer, N. A. Index Fossils, 1; 1906, p. 44, fig. 70.—Parks, Univ. Toronto Studies, Geol. Series, No. 4, 1907, p. 28; ibid., No. 5, 1908, p. 48, pl. 13, figs. 1–6.
Niagaran: Thorold, Ontario, and Lockport, New York (Lockport); ?Durham, Ontario (Guelph).

STROMATOPORA BARRETTI Grabau and Shimer. See Syringostroma barretti.

Stromatopora carteri Nicholson.
Stromatopora carteri Nicholson, Mon. British Strom., 1891, p. 174, pl. 1, figs. 6, 7; pl. 22, figs. 1, 3; Ann. Mag. Nat. Hist., 6th ser., 7, 1891, p. 314, pl. 9, figs. 5, 6.—Whiteaves, Canadian Rec. Sci., 7, 1896, p. 137.—Parks, Ottawa Nat., 22, 1908, p. 28; Univ. Toronto Studies, Geol. Series, No. 5, 1908, p. 52; ibid., No. 6, 1909, p. 38, pl. 19, figs. 9, 10.
Silurian: England; Hudson Bay region, Canada.

Stromatopora clarkei Parks.
Stromatopora clarkei Parks, Univ. Toronto Studies, Geol. Series, No. 6, 1909, p. 48, pl. 17, fig. 12; pl. 18, fig. 1.
Cayugan (Cobleskill): Schoharie County, New York.

STROMATOPORA COMPACTA Billings. See Solenopora compacta.

STROMATOPORA CONCENTRICA of authors. See Stromatopora constellata.

Stromatopora constellata Hall.
Stromatopora constellata Hall, Pal. New York, 2, 1851, p. 324, pl. 72, figs. 2a, b.—Whiteaves, Canadian Rec. Sci., 7, 1896, p. 137.—Schuchert, Amer. Geol., 31, 1903, p. 164.—Parks, Univ. Toronto Studies, Geol. Series, No. 5, 1908, p. 44, pl. 13, figs. 7, 8, 10; ibid., No. 6, 1909, pp. 41, 46, pl. 17, figs. 10, 11; pl. 18, fig. 8.—Swartz, Maryland Geol. Surv., Low. Dev., 1913, p. 221, pl. 27, figs. 1–6; pl. 28, figs. 1–2; pl. 29; pl. 30, fig. 1.
Cœnostoma constellatum Spencer, Bull. Univ. State Missouri, 1, 1884, p. 48, pl. 6, fig. 11; Trans. Acad. Sci. St. Louis, 4, 1884, p. 598, pl. 6, fig. 11.
Cœnostroma constellatum Miller, N. A. Geol. Pal., 1889, p. 157, fig. 100.—Nicholson, Mon. British Strom. Pal. Soc., 1891, p. 173.
Stromatopora hudsonica Dawson, Quart. Jour. Geol. Soc., 35, 1879, p. 52, pl. 4, figs. 9a, 9b; pl. 5, fig. 10.—Nicholson, Mon. British Strom., 1891, p. 172; Ann. Mag. Nat. Hist., 6th ser., 7, 1891, p. 312, pl. 8, figs. 1–3.—Whiteaves, Canadian Rec. Sci., 7, 1896, p. 137.
Stromatopora concentrica Hall, Pal. New York, 2, 1851, pl. 73, figs. 2a–b.—Nicholson, Rep. Pal. Prov. Ontario, pt. 2, 1875, p. 63.—Chamberlin, Geol. Wisconsin, 1, 1883, p. 190.—Spencer, Trans. Acad. Sci. St. Louis, 4, 1884, p. 595, pl. 6, figs. 8, 8a; Bull. Mus. Univ. State Missouri, 1, 1884, p. 45, pl. 6, figs. 8, 8a.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 1102, fig.—

Stromatopora constellata—Continued.

Grabau, Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 134, fig. 28.—Schuchert, Amer. Geol., 31, 1903, p. 165.—Weller, Geol. Surv. New Jersey Pal., 3, 1903, p. 223.

Niagaran and Cayugan: Schoharie, New York (Cobleskill). Various localities in New York and Canada.

Helderbergian (Keyser): Cumberland, etc., Maryland; West Virginia; Pennsylvania; New Jersey.

STROMATOPORA CONTORTA Grabau and Shimer. See Syringostroma centrotum.

Stromatopora corallifera Parks.

Stromatopora corallifera Parks, Univ. Toronto Studies, Geol. Series, No. 6, 1909, p. 22, pl. 18, fig. 7.

Helderbergian: Port Jervis, New York.

STROMATOPORA CYSTOSA Rominger. See Clathrodictyon cystosum.

Stromatopora galtensis (Dawson).

Cœnostroma galtense Dawson, Life's Dawn on the Earth, 1875, p. 160; Quart. Jour. Geol. Soc. London, 25, 1879, p. 52.

Stromatopora galtensis Nicholson, Mon. Brit. Strom., 1891, p. 173.—Whiteaves. Pal. Fossils, 3, pt. 2, 1895, p. 52; Can. Rec. Sci., 7, 1896, p. 136.—Clarke and Ruedemann, Mem. New York State Mus., 5, 1903, p. 36, pl. 1, fig. 13.—Whiteaves, Pal. Fossils, 3, 1906, p. 328.—Parks, Univ. Toronto Studies, Geol. Series, No. 4, 1907, p. 25, pl. 4, figs. 3, 4.—Grabau, Mich. Geol. Surv., Geol. Ser., 1, 1909, p. 90, pl. 8, fig. 1

Niagaran (Guelph) Elora and Durham, Ontario.

Upper Monroan (Amherstburg): Amherstburg, Ontario.

Stromatopora Hindei Nicholson. Not recognized.

Stromatopora hindei Nicholson, Ann. Mag. Nat. Hist., 4th ser., 4, 13, 1874, p. 12, and p. 13, figs. 3a–c; Rep. Pal. Prov. Ontario, 1874, p. 13, figs. 1a–c.—Nicholson and Hinde, Canadian Jour., n. s., 14, 1874, p. 140.—Nicholson, Rep. Pal, Prov. Ontario, pt. 2, 1875, pp. 43, 49, 50, fig. 23.—Nicholson and Murie, Jour. Linn. Soc. London, Zool., 14, 1878, p. 209, fig. 3.—James, Paleontologist, No. 2, 1878, p. 10.—Whiteaves, Can. Rec. Sci., 7, 1897, p. 144.—Parks, Univ. Toronto Studies, Geol. Series, No. 5, 1908, p. 56.—Miller, N. A. Geol. Pal., 1889, p. 165, fig. 124.—James, J. F., Jour. Cincinnati Soc. Nat. Hist., 15, pt. 3, 1892, p. 92.

Niagaran: Owen Sound, Ontario.

Observation.—Species rejected by author.

STROMATOPORA HUDSONICA Dawson. See Stromatopora constellata.

Stromatopora indianensis Parks.

Stromatopora indianensis Parks, Univ. Toronto Studies, Geol. Series, No. 5, 1908, p. 50, pl. 12, figs. 6, 9.

Brassfield (?Louisville): North Madison, Indiana.

Holotype.—Cat. No. 41216, U.S.N.M.

Stromatopora indianiensis James.

Stromatopora indianiensis James, Jour. Cincinnati Soc. Nat. Hist., 15, pt. 3, 1892, p. 92.—Parks, Univ. Toronto Studies, Geol. Series, No. 7, 1910, p. 48.

Upper Cincinnatian: Near Connersville, Indiana.

Observation.—Probably the same as Stromatocerium huronense, although the James species is not defined so as to be recognized. Moreover the type is lost, so the name had better be dropped.

STROMATOPORA INSOLENS James. See Dystactospongia insolens.

STROMATOPORA LICHENOIDES James. See Arthropora shafferi.

Stromatopora ludlowensis James. Not recognized.
Stromatopora ludlowensis James. Jour. Cincinnati Soc. Nat. Hist., 7, 1884, p. 140, pl. 8, figs. 4, 4a, 7, 7a; ibid., 9, 1886, p. 251; ibid., 15, pt. 3, 1892, p. 91.—Bassler, Proc. U. S. Nat. Mus., 30, 1906, p. 57.
Eden: Ludlow, Kentucky.
Observation.—Not a valid species. The type specimen is an irregular, solid mass, composed of successively incrusting layers of Ceramoporella.

Stromatopora lunata James. Not recognized.
Stromatopora lunata James, Paleontologist, No. 2, 1878, p. 10.
Alexandrian (Brassfield): Clinton County, Ohio.

STROMATOPORA MAMMILLATA Schmidt. See Clathrodictyon striatellum.

STROMATOPORA MINUTUM Rominger. See Clathrodictyon vesiculosum minutum.

STROMATOPORA OSTIOLATA Nicholson. See Clathrodictyon ostiolatum.

STROMATOPORA PAPILLATA James. See Dermatostroma papillatum.

STROMATOPORA PUSTULOSA Safford. See Stromatocerium pustulosum.

Stromatopora (Cœnostroma) pustulosa Grabau.
Stromatopora (Cœnostroma) pustulosum Grabau, Michigan Geol. Surv., Geol. Ser., 1, 1909, p. 91, pl. 9, figs. 3, 4.
Upper Monroan (Anderdon): Anderdon quarry, near Amherstburg, Ontario.

STROMATOPORA RUGOSA Billings. See Stromatocerium rugosum.

STROMATOPORA SCABRA James. See Dermatostroma scabrum.

STROMATOPORA STRIATELLA McCoy. See Clathrodictyon vesiculosum.

STROMATOPORA STRIATELLA D'Orbigny. See Clathrodictyon striatellum.

STROMATOPORA SUBCYLINDRICA James. See Labechia subcylindrica.

Stromatopora tubularis James. Not recognized.
Stromatopora tubularis James, Jour. Cincinnati Soc. Nat. Hist., 7, 1884, p. 139, pl. 7, figs. 3–3b; ibid., 9, 1886, p. 250; ibid., 15, 1892, p. 89.—Bassler, Proc. U. S. Nat. Mus., 30, 1906, p. 57.
Eden: Cincinnati, Ohio.
Observation.—The type of this species is a cephalopod shell incrusted by successive layers of Ceramoporella.

STROMATOPORA VARIOLARIS Von Rosen. See Clathrodictyon variolare.

STROMATOPORA VESICULOSA Rominger. See Clathrodictyon cystosum.

Stromatopora wilsoni Parks.
Stromatopora wilsoni Parks, Ottawa Nat., 22, 1908, p. 28; Univ. Toronto Studies, Geol. Series, No. 6, 1909, p. 40, pl. 19, figs. 11, 12.
Niagaran: Pagwachuan River, Hudson Bay, Canada.

STROMATOPORELLA Nicholson. Genotype: Stromatopora granulata Nicholson.
Stromatoporella Nicholson, Ann. Mag. Nat. Hist., 5th ser., 17, 1886, p. 234, footnote; Mon. Brit. Strom. Pal. Soc., 1886, p. 92; ibid., 1892, p. 219.—Parks, Univ. Toronto Studies, Geol. Ser., No. 4, 1907, p. 29.

Stromatoporella elora Parks.

Stromatoporella elora Parks, Univ. Toronto Studies, Geol. Ser., No. 4, 1907, p. 29, pl. 3, fig. 3; pl. 5, figs. 1–3; pl. 6, fig. 6.

Niagaran (Guelph): Galt, Elora, Durham, etc., Ontario.

Stromatoporella elora minuta Parks.

Stromatoporella elora var. minuta Parks, Univ. Toronto Studies, Geol. Ser., No. 4, 1907, p. 31, pl. 5, figs. 2, 5, 6; pl. 6, fig. 7.

Niagaran (Guelph): Durham, Ontario.

STROMATOTRYPA Ulrich. Genotype: S. ovata Ulrich.

Stromatotrypa Ulrich, Geol. Minnesota, 3, 1893, p. 301.—Miller, N. A. Geol. Pal., 2d App., 1897, p. 758.—Nickles and Bassler, Bull. U. S. Geol. Surv., 173, p. 35.—Grabau and Shimer, N. A. Index Fossils, 1, p. 137.

Stromatotrypa globularis Ulrich and Bassler.

Stromatotrypa globularis Ulrich and Bassler, Maryland Geol. Surv., Low. Dev., 1913, p. 279, pl. 62, figs. 1–4; pl. 66, figs. 8, 9.

Helderbergian (Keyser): Keyser, West Virginia; Cash Valley, Pinto, etc., Maryland.

Cotypes.—Cat. No. 53671, U.S.N.M.

Stromatotrypa ovata Ulrich.

Stromatotrypa ovata Ulrich, Geol. Minnesota, 3, 1893, p. 302, pl. 24, figs. 24–31.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 137, fig. 188m, 190m.

Black River: Minneapolis and St. Paul, Minnesota (Decorah); Beloit, Wisconsin (Platteville).

Cotypes.—Cat. No. 43614, U.S.N.M.

STROMBODES Schweigger. Genotype: S. pentagonus Goldfuss.

Strombodes Schweigger, Handb. der Naturg., 1820, p. 418.—Goldfuss, Petrefacta, 1826, p. 63.—Eichwald, Zool. Specialis, pt. 1, Vilnae, 1829, p. 188.—Dana, Amer. Jour. Sci. Arts, 2d ser., 1, 1846, p. 185; Wilkes' U. S. Expl. Exped., 1838–42, 7, Zoophytes, 1846, p. 359.—Owen, Amer. Jour. Sci. Arts, 2d ser., 2, 1847, p. 70.—McCoy, Ann. Mag. Nat. Hist., 2d ser., 3, 1849, p. 10.—Edwards and Haime, Mon. d. Polyp. Foss. d. Terr. Pal., 1851 (Arch. du Mus. d'Hist. Nat., 5), pp. 172, 426.—McCoy, Cont. Brit. Pal., 1854, p. 78; Brit. Pal. Rocks and Foss., 1854, p. 34.—Pictet, Traite de Pal., 2d ed., 4, 1857, p. 459.—Milne-Edwards, Hist. Nat. d. Corall., 3, 1860, p. 416.—Goldfuss, Petrefacta, 2d ed., pt. 1, 1862, p. 58.—Rominger, Geol. Surv. Michigan, 3, pt. 2, 1876, p. 130.—Zittel, Handb. Pal., 1, 1879, p. 233.—Roemer, Leth. geog., pt. 1, Leth. Pal., 1883, p. 400.—Miller, N. A. Geol. Pal., 1889, p. 205.—Sherzer, Amer. Geol., 7, 1891, pp. 296–301.—Koken, Die Leitfossilien, Leipzig, 1896, p. 312; Zittel-Eastman Textb. Pal., 1, 1913, p. 79.—Pocta, Syst. Sil. du Centre Boheme, 8, pt. 2, 1902, p. 176.—Grabau and Shimer, N. A. Index Fossils, 1, 1906, p. 70; Zittel-Eastman Textb. Pal., 2d ed., 1913, p. 86.

Lamellopora Owen, Geol. Expl. Iowa, Wisconsin, Illinois, 2d ed., 1844, p. 70.

Arachnophyllum Dana, Wilkes' U. S. Expl. Exped., 1838–42, 7, Zoophytes, 1846, p. 360, pl. 26, fig. 5; Amer. Jour. Sci. Arts, 2d ser., 1, 1846, p. 186, fig. 1.—McCoy, Brit. Pal. Rocks Fossils, 1854, p. 37.—Dybowski, Archiv. f. Naturf. Liv.-, Ehst- und Kurl., 5, 1873, p. 339.—Miller, N. A. Geol. Pal., 1889, p. 172.—Lambe, Cont. Can. Pal., Geol. Surv. Canada, 4, pt. 2, 1901, p. 180. (Genotype: Acervularia baltica Lonsdale.)

Astræophyllum Nicholson and Hinde, Canadian Jour., n. s., 14, 1874, p. 152.—Nicholson, Rep. Pal. Prov. Ontario, pt. 2, 1875, p. 56.—Miller, N. A. Geol. Pal., 1889, p. 172. (Genotype: A. gracile Nicholson and Hinde.)

Strombodes diffluens Edwards and Haime.

Strombodes diffluens Edwards and Haime, Polyp. Foss. Ter. Pal., 1851, p. 431; Brit. Foss. Corals, 1855, p. 294, pl. 71, figs. 2, 2a.—Billings, Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 34 (loc. ref.).

Arachnophyllum diffluens Lambe, Ottawa Nat., 12, 1899, p. 244; Contr. Canadian Pal., Geol. Surv. Canada, 4, pt. 2, 1901, p. 183, pl. 14, fig. 12.

Silurian: Wenlock, England (Wenlock); Chicotte River and Southwest Point, Anticosti (Ellis Bay, Gun River); Owen Sound, Ontario; Lake Temiscaming, Quebec.

Strombodes eximius Billings.

Strombodes eximius Billings, Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 93.

Arachnophyllum eximium Lambe, Ottawa Nat., 12, 1899, p. 245; Cont. Canadian Pal., Geol. Surv. Canada, 4, pt. 2, 1901, p. 184, pl. 16, figs. 3, 3a, 4.

Niagaran: Manitoulin and Cockburn Islands, Lake Huron.

Strombodes gigas (Owen).

Astrea? gigas Owen, Rep. Mineral Lands, 1844, p. 70, pl. 14, fig. 7 (not Phillipastrea gigas of Billings and subsequent authors).

Strombodes gigas Calvin, Amer. Geol., 12, 1893, p. 111, pl. 5, fig. 5.

Niagaran: Iowa and Wisconsin.

Strombodes gracilis (Nicholson and Hinde).

Astræophyllum gracile Nicholson and Hinde, Canadian Jour., n. s., 14, 1874, p. 138, fig. 4.—Nicholson, Rep. Pal. Prov. Ontario, pt. 2, 1875, p. 57, fig. 28.—Miller, N. A. Geol. Pal., 1889, p. 172, text. fig. 135.

Niagaran: Owen Sound, Ontario.

STROMBODES GRACILIS Billings. See Acervularia gracilis.

Strombodes granulosus (Foerste).

Arachnohpyllum (Strombodes) granulosum Foerste, Bull. Kentucky Geol. Surv. 7, 1906, p. 318, pl. 3, fig. 1.

Clinton (Waco): Near Waco, Kentucky.

Strombodes incertus Davis.

Strombodes incertus Davis, Kentucky Fossil Corals, Geol. Surv. Kentucky, pt, 2, 1885, pl. 123, fig. 2.

Niagaran (Louisville): Near Louisville, Kentucky.

Strombodes infundibularius (Owen).

Lamellopora infundibularia Owen, Geol. Expl. Iowa, Wisconsin, Illinois, 2d ed., 1844, p. 70, pl. 14, fig. 1.

Strombodes infundibularius Edwards and Haime, Mon. d. Polyp. Foss. d. Terr. Pal., 1851 (Arch. du Mus. d'Hist. Nat., 5), p. 432.

Niagaran: Iowa and Wisconsin.

Observation.—Neither defined nor figured so as to be recognized.

Strombodes mamillaris (Owen).

Astrea mamillaris Owen, Geol. Expl. Iowa, Wisconsin, Illinois, 2d ed., 1844, p. 70, pl. 14, fig. 3.

Strombodes mamillaris Davis, Kentucky Fossil Corals, Geol. Surv. Kentucky, pt. 2, 1885, pl. 123, fig. 4.—Calvin, Amer. Geol., 12, 1893, p. 109.

Strombodes mamillatus Rominger, Geol. Surv. Michigan, 3, pt. 2, 1876, p. 133, pl. 48, fig. 4.—Grabau and Shimer, N. A. Index Fossils, 1, 1906, p. 71.

Strombodes mamillaris—Continued.

Arachnophyllum mamillare Lambe, Cont. Canadian Pal., Geol. Surv. Canada, 4, pt. 2, 1901, p. 182, pl. 15, fig. 4.

Niagaran: Iowa, Wisconsin, Michigan, Kentucky, Indiana, etc.

Strombodes mamillaris distans (Foerste).

Arachnophyllum (Strombodes) mamillare-distans Foerste, Bull. Kentucky Geol. Surv., 7, 1906, p. 319, pl. 3, figs. 2a–c.

Clinton (Waco): Panola, Kentucky.

Strombodes mamillaris wilmingtonensis (Foerste).

Arachnophyllum mamillare-wilmingtonensis Foerste, Bull. Kentucky Geol. Surv., 7, 1906, p. 320.

Lyellia striata N. P. James, Paleontologist, No. 2, 1878, p. 10.

Strombodes pygmæus Foerste, Bull. Sci. Lab. Denison Univ., 3, 1888, p. 120, pl. 13, fig. 18.

Clinton (Dayton): Near Wilmington, Ohio.

STROMBODES MAMILLATUS Rominger. See Strombodes mamillaris.

Strombodes pentagonus Goldfuss.

Strombodes pentagonus Goldfuss, Petrefacta Germaniae, 1, 1826, p. 62, pl. 21, fig. 3a, b.—Troost, 6th Geol. Rep. Tennessee, 1841, p. 185.—Edwards and Haime, Mon. d. Polyp. Foss. d. Terr. Pal., 1851 (Arch. du Mus. d'Hist. Nat., 5), p. 430.—Milne-Edwards, Hist. Nat. d. Corall., 3, 1860, p. 420.—Goldfuss, Petrefacta, 2d ed., pt. 1, 1862, p. 58.—Billings, Geol. Canada, Geol. Surv. Canada, 1863, p. 306, fig. 308.—Rominger, Geol. Surv. Michigan, 3, pt. 2, 1876, p. 131, pl. 48, fig. 2.—Whitfield, Geol. Wisconsin, 4, 1882, p. 275, pl. 15, fig. 5.—Roemer, Leth. geog., pt. 1, Leth. Pal., 1883, p. 401.—Davis, Kentucky Fossil Corals, Geol. Surv. Kentucky, pt. 2, 1885, pl. 121, figs. 2, 3.—Miller, N. A. Geol. Pal., 1889, p. 205, fig. 222.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1109, fig.—Grabau and Shimer, N. A. Index Fossils, 1, 1906, p. 70, fig. 109.

Arachnophyllum pentagonum Lambe, Cont. Canadian Pal., Geol. Surv. Canada, 4, pt. 2, 1901, p. 181, pl. 15, figs. 3, 3a.

Niagaran: Drummonds Island, etc., Lake Huron; Kentucky; Tennessee; Wisconsin; etc.

STROMBODES PYGMÆUS Foerste. See Strombodes mamillaris-wilmingtonensis.

Strombodes pygmæus Rominger.

Strombodes pygmæus Rominger, Geol. Surv. Michigan, 3, pt. 2, 1876, p. 132, pl. 48, fig. 3.—Davis, Kentucky Fossil Corals, Geol. Surv. Kentucky, pt. 2, 1885, pl. 123, fig. 1.

Niagaran: Point Detour and Drummonds Island, Lake Huron; Louisville, Kentucky (Louisville).

Strombodes quadrangularis Davis.

Strombodes quadrangularis Davis, Kentucky Fossil Corals, Geol. Surv. Kentucky, pt. 2, 1885, pl. 122, fig. 3.

Niagaran (Louisville): Near Louisville, Kentucky.

Strombodes richardsoni (Salter).

Arachnophyllum Richardsoni Salter, Sutherland's Jour. Voyage in Baffins Bay, etc., 2, 1852, p. 232, pl. 6, figs. 10, 10a.—Etheridge, Quart. Jour. Geol. Soc. London, 34, 1878, p. 585.

Niagaran: Point Eden, Baring Bay, and Cape Hilgard, Arctic America.

Strombodes separatus Ulrich.

Strombodes separatus Ulrich, Cont. Amer. Pal., 1, 1886, p. 32, figs. 1, 2.

Niagaran (Louisville): Near Louisville, Kentucky.

Strombodes sinemurus Davis.

Strombodes sinemurus Davis, Kentucky Fossil Corals, Geol. Surv. Kentucky, pt. 2, 1885, pl. 121, fig. 4; pl. 122, figs. 4, 6; pl. 123, fig. 3.

Niagaran (Louisville): Near Louisville, Kentucky.

Strombodes striatus (D'Orbigny).

Favastræa striata D'Orbigny, Prodr. Pal., 1, 1849, p. 48.—Bonle and Thevenin, Ann. Pal., 1, 1906, p. 8, pl. 3, figs. 10, 11.

Strombodes striatus Edwards and Haime, Mon. d. Polyp. Foss. d. Terr. Pal., 1851 (Arch. du Mus. d'Hist. Nat., 5), p. 430.—Milne-Edwards, Hist. Nat. d. Corall., 3, 1860, p. 420.—Rominger, Geol. Surv. Michigan, 3, pt. 2, 1876, p. 131, pl. 48, fig. 1.—Davis, Kentucky Fossil Corals, Geol. Surv. Kentucky, pt. 2, 1885, pl. 121, fig. 1; pl. 122, figs. 1, 2.—Grabau and Shimer, N. A. Index Fossils, 1, 1906, p. 71.

Niagaran: Drummonds Island, etc., Lake Huron; Louisville, Kentucky; Tennessee (Louisville).

Strombodes unicus Davis.

Strombodes unicus Davis, Kentucky Fossil Corals, Geol. Surv. Kentucky, pt. 2, 1885, pl. 122, fig. 5.

Niagaran (Louisville): Near Louisville, Kentucky.

STROPHEODONTA Hall. Genotype: Strophomena demissa Conrad.

Stropheodonta Hall, Pal. New York, 2, 1852, p. 63.—Hall and Clarke, ibid., 8, pt. 1, 1892, p. 284.—Beecher, Amer. Jour. Sci., 3d ser., 44, 1892, p. 147.—Grabau, Bull. Buffalo Soc. Nat. Sci., 6, 1899, p. 194; ibid., 7, 1901, p. 180; Bull. New York State Mus., 45, 1901, p. 180—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 212.—Schuchert, Zittel-Eastman Textb. Pal., 1900, p. 313; 2d ed., 1913, p. 385.

Strophodonta Hall, Geol. Surv. Iowa, 1, 1858, p. 491.—Billings, Canadian Jour. Sci. Arts, n. s., 6, 1861, p. 332; Proc. Portland Soc. Nat. Hist., 1863, p. 108.—Hall, Pal. New York, 4, 1867, p. 78.—Zittel, Handb. Pal., 1, 1880, p. 677.—Hall, Proc. Amer. Assoc. Adv. Sci., 32, 1884, p. 268.—Miller, N. A. Geol. Pal., 1889, p. 379.—Nettelroth, Kentucky Fossil Shells, Mem. Kentucky Geol. Surv., 1889, p. 142.

Brachyprion Shaler, Bull. Mus. Comp. Zool., 4, 1865, p. 63.—Hall and Clarke, Nat. Hist. New York, 8, pt. 1, 1892, pp. 220, 286, 288, 289, 292; 11th Ann. Rep. New York State Geol., 1894, pp. 280, 281.—Schuchert, Zittel-Eastman Textb. Pal., 1913, p. 385.

Leptostrophia Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 288; 11th Ann. Rep. New York State Geol., 1894, p. 281. (Genotype: Stropheodonta magnifica Hall.)

Cardiodonta Hall, Proc. Amer. Assoc. Adv. Sci., 2, 1850, p. 349, footnote.

Stropheodonta acanthoptera (Whiteaves).

Strophomena acanthoptera Whiteaves, Canadian Rec. Sci., 1891, p. 294, pl. 3, figs. 1, 2.

Stropheodonta acanthoptera Whiteaves, Geol. Surv. Canada, Pal. Foss., 3, pt. 4, 1906, p. 285, pl. 24, figs. 8, 9.

Niagaran: District of Saskatchewan and Lake Winnepegosis, Canada.

Stropheodonta (Brachyprion) anticostiensis (Shaler).

Strophomena anticostiensis Shaler, Bull. Mus. Comp. Zool., 4, 1865, p. 62.

Anticostian (Gun River and Jupiter River): Island of Anticosti.

Stropheodonta bipartita (Hall).

Leptæna bipartita Hall, Pal. New York, 2, 1852, p. 326, pl. 74, figs. 4, 5.

Strophomena bipartita Hall, 12th Rep. New York State Cab. Nat. Hist., 1859, p. 82.—Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 429.

Stropheodonta bipartita Weller, Geol. Surv. New Jersey, Pal., 3, 1903, p. 226, pl. 20, figs. 1-5.

Stropheodonta (Leptostrophia) bipartita Schuchert, Amer. Geol., 31, 1903, p. 165.—Maynard, Maryland Geol. Surv., Low. Dev., 1913, p. 316, pl. 57, figs. 17, 18.

Stropheodonta textilis Hall, Nat. Hist. New York, 2, 1852, p. 327, pl. 74, fig. 6.—Schuchert, Bull. U. S. Geol. Surv., 89, 1897, p. 427.

Stropheodonta (Leptostrophia) textilis Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 288.—Schuchert, Amer. Geol., 31, 1903, p. 165.

Leptæna —— Hall, Nat. Hist. New York, 2, 1852, pl. 74, fig. 3.

Strophodonta nearpassi Barrett, Amer. Jour. Sci., 3d ser., 15, 1878, p. 372.

Stropheodonta nearpassi Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 427.—Weller, Ann. Rep. State Geol. New Jersey for 1899, 1900, p. 15.

Cayugan (Cobleskill): Schoharie, New York.

Helderbergian: Near Port Jervis, etc., New Jersey (Decker Ferry); Hyndman, Pennsylvania; Hancock, near Cumberland, Pinto, etc., Maryland (Keyser).

Stropheodonta corrugata (Conrad).

Strophomena corrugata Conrad, Jour. Acad. Nat. Sci. Philadelphia, 8, 1842, p. 256, pl. 14, fig. 8.—Hall, Geol. New York; Rep. 4th Dist., 1843, p. 73, fig. 2 on p. 72; 12th Rep. New York State Cab. Nat. Hist., 1859, p. 82.—Foerste, Proc. Boston Soc. Nat. Hist., 24, 1890, p. 303, pl. 6, fig. 25.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1125, fig.

Leptæna corrugata Hall, Pal. New York, 2, 1852, p. 59, pl. 21, figs. 2a-2c.

Strophodonta corrugata Hall, 2d Ann. Rep. New York State Geol., 1883, pl. 46, fig. 1.

Stropheodonta corrugata Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pl. 15, fig. 1; pt. 2, 1895, pl. 84, fig. 14.—Grabau, Bull. New York State Mus., 45, 1901, p. 181, fig. 85; Bull. Soc. Nat. Sci., 7, 1901, p. 181, fig. 85.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 213, fig. 253.

Stropheodonta cf. corrugata Kindle and Breger, 28th Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1904, p. 429, pl. 1, fig. 3.

Clinton: Rochester, Wolcott, etc., New York; Cumberland Gap, Tennessee.

?Niagaran: Georgetown, Indiana.

Stropheodonta(?) corrugata pleuristriata (Foerste).

Leptæna corrugata (part) Hall, Pal. New York, 2, 1852, p. 59, pl. 21, figs. 2d, 2e.

Strophomena corrugata var. pleuristriata Foerste, Proc. Boston Soc. Nat. His 24, 1890, p. 303, pl. 6, figs. 26, 27.

Clinton: Cumberland Gap, Tennessee.

Stropheodonta demissa homolostriata Grabau.

Stropheodonta demissa mut. homolostriata Grabau, Michigan Geol. Surv., Ge Ser., 1, 1909, p. 126, pl. 17, fig. 6.

Upper Monroan (Amherstburg): Detroit River opposite Amherstburg, Ontario.

Stropheodonta feildeni Etheridge.

Strophodonta feildeni Etheridge, Quart. Jour. Geol. Soc. London, 34, 1878, p. 5 pl. 25, fig. 4.

Stropheodonta Fieldeni—Continued.
Silurian(?): Cape Hilgard, Arctic America.
Observation.—Since this species is very closely related to S. magnifica of the Oriskany sandstone the horizon is probably Lower Devonian (Schuchert).

STROPHEODONTA? GENICULATA Schuchert. See Strophonella (Strophoprion) geniculata

Stropheodonta(?) gilpeni (Dawson).
Strophomena gilpeni Dawson, Canadian Nat. Geol., n. s., 9, 1880, p. 341.
Stropheodonta(?) gilpeni Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 422.
Silurian: Pictou, Nova Scotia.

Stropheodonta (Brachyprion) latisculptilis (Savage).
Brachyprion latisculptilis Savage, Bull. State Geol. Surv. Illinois, 23, 1913, p. 71, pl. 4, fig. 5.
Upper Medinan (Edgewood): Louisiana, Missouri; south of Hamburg, Illinois.

Stropheodonta (Brachyprion) leda (Billings).
Strophomena leda Billings, Canadian Nat. Geol., 5, 1860, p. 55, figs. 2, 3; Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 120, figs. 98, 99 (adv. sheets, 1862); Geol. Canada, 1863, p. 311, fig. 316.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 1129, figs.
Brachyprion leda Shaler, Bull. Mus. Comp. Zool., 1865, p. 63.
Stropheodonta leda Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 288.—Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 423.
Rafinesquina leda Whiteaves, Pal. Foss., 3, pt. 3, Geol. Surv. Canada, 1897, p. 172.
Anticostian (Becsie River and Jupiter River): East Point, near Becsie River Bay, etc., Anticosti.

Stropheodonta macra (Winchell and Marcy).
Strophomena macra Winchell and Marcy, Mem. Boston Soc. Nat. Hist., 1, 1865, p. 91.—Hall, 20th Rep. New York State Cab. Nat. Hist., 1867, p. 392.
Stropheodonta macra Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 424.
Niagaran: Probably near Chicago, Illinois.

Stropheodonta mundula Foerste.
Stropheodonta mundula Foerste, Cincinnati Soc. Nat. Hist. Jour., 21, 1909, p. 21, pl. 2, fig. 18.
Clinton (Crab Orchard): Between Poplar Flats and Martin's store, Lewis County, Kentucky.

STROPHEODONTA NEARPASSI Weller. See Stropheodonta bipartita.

Stropheodonta (Brachyprion) newsomensis Foerste.
Stropheodonta (Brachyprion) newsomensis Foerste, Bull. Sci. Lab. Denison Univ., 14, 1909, p. 87, pl. 4, fig. 67.
Niagaran (Waldron): Newsom, Tennessee.

STROPHEODONTA (BRACHYPRION) NIAGARENSIS Whiteaves. See Stropheodonta profunda.

Stropheodonta patersoni antiqua Holtedahl.
Stropheodonta patersoni antiqua Holtedahl, 2d Arct. Exp. "Fram," 1898-1902, No. 32, p. 19, pl. 7, figs. 2, 3.
Helderbergian (Lower beds): Near Borgen, Southwestern Ellesmereland, Arctic America.

Stropheodonta (Brachyprion) philomela (Billings).

Strophomena philomela Billings, Canadian Nat. Geol., 5, 1860, p. 56, figs. 4, 5; Pal. Fossils, 1, 1862, p. 122, figs. 100, 101; Geol. Canada, 1863, p. 311, fig. 317.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1131, figs.

Brachyprion ventricosa Shaler, Bull. Mus. Comp. Zool., 1865, p. 63.

Stropheodonta(?) ventricosa Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 427.

Anticostian (Gun River-Jupiter River): East Point, Southwest Point, and The Jumpers, Anticosti.

Stropheodonta (Brachyprion) plana Foerste.

Stropheodonta (Brachyprion) planus Foerste, Cincinnati Soc. Nat. Hist. Jour., 21, 1909, p. 22, pl. 1, figs. 13A-C; pl. 2, figs. 11A, B.

Clinton (West Union): Near Martins and at Harin Hill, Lewis County, Kentucky; West Union, Ohio.

Stropheodonta præplicata Grabau.

Stropheodonta præ-plicata Grabau, Michigan Geol. Surv., Geol. Ser., 1, 1909, p. 126, pl. 17, fig. 12.

Upper Monroan (Amherstburg): Detroit River, opposite Amherstburg, Ontario.

Stropheodonta prisca Hall.

Stropheodonta prisca Hall, Pal. New York, 2, 1852, p. 63, pl. 21, fig. 9.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, p. 1117, figs.

Clinton (upper): Kirkland, Oneida County, New York.

Stropheodonta (Brachyprion) profunda (Hall).

Leptæna profunda Hall, Pal. New York, 2, 1852, p. 61, pl. 21, figs. 4, 5.

Strophomena profunda Hall, 12th Rep. New York State Cab. Nat. Hist., 1859, p. 82.

Strophodonta profunda Hall, 20th Rep. New York State Cab. Nat. Hist., 1867, pp. 369, 392, pl.13, figs. 3, 4; 28th Rep. New York State Mus. Nat. Hist. 1879, p. 151, pl. 23, figs. 9, 10; 11th Rep. Indiana State Geol., 1882, p. 29, pl. 23, figs. 9, 10; pl. 27, fig. 18; 2d Ann. Rep. New York State Geol., 1883, pl. 44, figs. 1-5 (?figs. 19, 20).—Nettelroth, Kentucky Fossil Shells, Mem. Kentucky Geol. Surv., 1889, p. 148, pl. 29, fig. 26; pl. 17, figs. 20, 21.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, p. 1118, fig.

Stropheodonta (Brachyprion) profunda Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pl.13, figs. 1-5 (?19, 20); pl. 20, figs. 29-31; pt. 2, 1895, pl. 84, fig. 12.

Stropheodonta profunda Grabau, Bull. New York State Mus., 45, 1901, p. 181, fig. 86; Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 181, fig. 86.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 213, fig. 254.

Brachyprion profundum Clarke and Ruedemann, Bull. New York State Mus., 65, 1903, p. 201 (gen. ref.).

Strophomena niagarensis Winchell and Marcy, Mem. Boston Soc. Nat. Hist., 1, 1865, p. 92, pl. 2, fig. 9.

Stropheodonta (Brachyprion) Niagarensis Whiteaves, Geol. Surv. Canada, Pal. Foss., 3, pt. 4, 1906, p. 271.

Niagaran: Rochester, etc., New York (Irondequoit-Rochester); Waldron, Indiana (Waldron); Louisville, Kentucky (Louisville); Racine, Wisconsin, and Bridgeport, Illinois (Racine).

Plesiotypes.—Cat. No. 51309, U.S.N.M. (Nettelroth).

Stropheodonta (Brachyprion) shaleri (Williams).

Brachyprion shaleri Williams, Proc. U. S. Nat. Mus., 45, 1913, p. 329, pl. 29, figs. 10-12.

Stropheodonta (Brachyprion) shaleri—Continued.
Silurian (Edmunds): Burnt Cove, etc., Edmunds Township, Washington County, Maine.
Cotypes.—Cat. Nos. 58950–58952, U.S.N.M.

Stropheodonta (Brachyprion) stropheodontoides (Savage).
Brachyprion stropheodontoides Savage, Bull. Geol. Surv. Illinois, 23, 1913, p. 72, pl. 4, fig. 4.
Upper Medinan (Edgewood): Louisiana, etc., Pike County, Missouri; south of Hamburg, Illinois.

STROPHEODONTA TEXTILIS Hall. See Stropheodonta (Leptostrophia) bipartita.

Stropheodonta varistriata (Conrad).
Strophomena varistriata Conrad, Jour. Acad. Nat. Sci. Philadelphia, 8, 1842, p. 255, pl. 14, fig. 6.
Strophodonta varistriata Hall, Pal. New York, 3, 1859, p. 180, pl. 8, figs. 1–16; pl. 16, figs. 1–8.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1119, figs.
Stropheodonta varistriata Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 427.—Maynard, Maryland Geol. Surv., Low. Dev., 1913, p. 312, pl. 59, figs. 1, 2.—Weller, Geol. Surv. New Jersey, Pal., 3, 1903, p. 261, pl. 24, figs. 13, 14.—Shimer, Bull. New York State Mus., 80, 1905, p. 240.—Grabau, Bull. New York State Mus., 92, 1906, p. 115, fig. 23.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 214, fig. 255.
Cayugan (Manlius): Albany and Schoharie localities, New York.
Helderbergian: New York and New Jersey (Decker Ferry); Hyndman, Pennsylvania, and Cash Valley, Maryland (Keyser); Dalhousie, New Brunswick, and Gaspe, Quebec.

Stropheodonta vasculosa Grabau.
Stropheodonta vasculosa Grabau, Michigan Geol. Surv., Geol. Ser., 1, 1909, p. 124, pl. 17, figs. 8–11.
Upper Monroan (Amherstburg): Detroit River, opposite Amherstburg, Ontario.

STROPHEODONTA? VENTRICOSA Schuchert. See Strophendonta (Brachyprion) philomena.

STROPHOCRINUS Sardeson. See Carabocrinus Billings.

STROPHODONTA GENICULATA Hall. See Strophonella geniculata.

STROPHODONTA NEARPASSI Barrett. See Strophodonta vipartita.

STROPHODONTA STRIATA Hall. See Strophonella striata.

STROPHOGRAPTUS Ruedemann. Genotype: S. trichomanes Ruedemann.
Strophograptus Ruedemann, Mem. New York State Mus., 7, pt. 1, 1904, pp. 716, 717.

Strophograptus trichomanes Ruedemann.
Strophograptus trichomanes Ruedemann, Mem. New York State Mus., 7, pt. 1, 1904, pp. 717, 718, pl. 4, figs. 17–20.
Canadian (Deepkill, Diplograptus dentatus zone): Deepkill, Rensselaer County, New York.

STROPHOMENA (Rafinesque) Blainville. Genotype: S. rugosa Blainville.
Strophomenes Rafinesque, Desc. Remarkable Objects in the Cabinet of Professor Rafinesque, 1831, p. 4.

STROPHOMENA—Continued.

Strophomena Blainville, Man. Malacol. et Conch., 1, 1825, p. 513, pl. 53, fig. 2.—De France, Dict. Sci. Nat., 51, 1827, p. 151, and atlas.—King, Mon. Per. Foss., Pal. Soc., 1850, p. 103.—Emmons, Amer. Geology, 1, pt. 2, 1855, pp. 186, 197.—Billings, Canadian Nat. Geol., 1, 1856, p. 133.—Pictet, Traite de Pal., 2d ed., 4, 1857, p. 58.—Chapman, Canadian Jour., n. s., 3, 1858, p. 161; ibid., 7, 1862, p. 112; Expos. Min. Geol. Canada, 1864, p. 115.—Meek (part), Pal. Ohio, 1, 1873, p. 73.—Miller, Cincinnati Quart. Jour. Sci., 2, 1875, p. 51.—Zittel, Handb. Pal., 1, 1880, p. 677.—Winchell, 9th Ann. Rep. Geol. Nat. Hist. Surv. Minnesota, 1881, p. 118.—Œhlert, Fischer's Manuel Conch., 1887, p. 1281.—Miller, N. A. Geol. Pal., 1889, p. 381.—Beecher, Amer. Jour. Sci., 3d ser., 44, 1892, pp. 145, 147.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 245.—Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 384.—Hall and Clarke, 11th Ann. Rep. New York State Geol., 1894, p. 283.—Koken, Die Leitfossilien, Leipzig, 1896, p. 237, fig. 198, 7, 8.—Nickles, Amer. Geol., 32, 1903, p. 214.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 222.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 894.—Schuchert, Zittel-Eastman Textb. Pal., 1900, p. 314; 2d. ed., 1913, p. 387.

Hemipronites Meek and Hayden, Pal. Upper Missouri, Smiths. Contr. Knowl., 14, 172, 1864, p. 24.—Miller, Cincinnati Quart. Jour. Sci., 2, 1875, p. 41.

STROPHOMENA ACANTHOPTERA Whiteaves. See Stropheodonta acanthoptera.

Strophomena acuta (Winchell and Schuchert).

Strophomena neglecta var. acuta Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 388, pl. 31, figs. 6, 7.

Strophomena acuta Foerste, Bull. Sci. Lab. Denison Univ., 17, 1912, p. 115, pl. 7, figs. 3a–d; pl. 9, figs. 13a, b.

Richmond (Maquoketa): Spring Valley, Minnesota.

STROPHOMENA ALTERNATA Conrad. See Rafinesquina alternata.

STROPHOMENA ALTERNATA var. ALTERNISTRIATA Miller. See Rafinesquina alternata alternistriata.

STROPHOMENA ALTERNATA var. FRACTA Meek. See Rafinesquina alternata fracta.

STROPHOMENA ALTERNATA var. LOXORHYTIS Meek. See Rafinesquina alternata loxorhytis.

STROPHOMENA ALTERNATA var. NASUTA Miller. See Rafinesquina nasuta.

STROPHOMENA ALTERNIRADIATA Shaler. See Schuchertella alterniradiata.

STROPHOMENA ANALOGA Davidson. See Leptæna rhomboidalis.

STROPHOMENA ANGULATA? Owen. See Rafinesquina alternata.

Strophomena(?) antiquata Sowerby.

Strophomena antiquata Sowerby, Murchison's Silurian System, 1839.—Billings, Pal. Fossils, 1, 1862, p. 129, fig. 107.

Silurian: Europe; Prinsta Bay, East Point, etc., Anticosti (Charleton—Jupiter River); Forks of the Chatts River, Gaspe.

STROPHOMENA APPROXIMATA James. See Strophomena vetusta approximata.

STROPHOMENA ARCUATA Shaler. See Strophomena semiovalis.

Strophomena(?) arethusa Billings.
Strophomena Arethusa Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 132 (adv. sheets, 1862).
Richmond (Charleton): Observation Cape, Anticosti.

STROPHOMENA ATAVA Matthew. See Eoorthis atava.

STROPHOMENA AURORA Billings. See Rafinesquina aurora.

Strophomena billingsi Winchell and Schuchert.
Strophomena recta Billings (not Conrad), Geol. Surv. Canada, Pal. Foss., 1, 1865, p. 130, fig. 108 (adv. sheets, 1862).
Strophomena billingsi Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 397, fig. 32.—Whiteaves, Pal. Foss., 3, pt. 3, 1897, p. 170.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 223.
Trenton: Ottawa, Ontario; St. Paul, Cannon Falls, and Fountain, Minnesota; East Selkirk, Manitoba.

STROPHOMENA BIPARTITA Hall. See Stropheodonta (Leptostrophia) bipartita.

STROPHOMENA CAMERATA Conrad. See Rafinesquina deltoidea.

Strophomena cardinalis (Whitfield).
Streptorhynchus cardinale Whitfield, Geol. Wisconsin, 4, 1882, p. 261, pl. 12, figs. 9, 10.
Strophomena cardinalis Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 252.—Foerste, Bull. Sci. Lab. Denison Univ., 17, 1912, p. 108.
Richmond (Maquoketa): Delafield, Wisconsin.

STROPHOMENA CERES Billings. See Rafinesquina ceres.

Strophomena clintonii Vanuxem. Not recognized.
Strophomena clintonii Vanuxem, Geol. New York, 3, 1842, p. 84.
Clinton: Clinton, New York.

Strophomena concordensis Foerste.
Strophomena concordensis Foerste, Bull. Sci. Lab. Denison Univ., 14, p. 213, pl. 4, fig. 6a–b, 1909; ibid., Bull. 17, 1912, p. 59, pl. 3, figs. 1a–m; Ohio Nat., 12, No. 3, 1912, p. 453, pl. 22, fig. 10.
Richmond (Top of Arnheim and Waynesville): Concord, etc., Kentucky; Ohio.

Strophomena concordensis huronensis Foerste.
Strophomena concordensis-huronensis Foerste, Bull. Sci. Lab. Denison Univ., 17, 1912, p. 63, pl. 2, figs. 1a–k.
Richmond: Clay cliffs (Cape Smyth)? Manitoulin Island, Kagawong and Gore Bay, Lake Huron.

Strophomena conradi Hall and Clarke.
Strophomena conradi Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 344, pl, 9A, fig. 3; pl. 20, figs. 32, 33; 48th Rep. New York State Mus., 2, 1897, p. 343, pl. 4, figs. 27–30; 14th Rep. State Geol. New York for 1894, 1897, p. 343, pl. 4, figs. 27–30.
Trenton: Trenton Falls, New York.

STROPHOMENA CONVEXA Owen. See Strophomena incurvata.

STROPHOMENA CORNUTA Hall. See Chonetes cornutus

STROPHOMENA CORRUGATA var. PLEURISTRIATA Foerste. See Stropheodonta(?) corrugata pleuristriata.

STROPHOMENA DECLIVIS James. See Rafinesquina declivis.

STROPHOMENA DEFLECTA Conrad. See Dinorthis (Plæsiomys) deflecta.

STROPHOMENA DELTOIDEA Owen. See Rafinesquina minnesotensis.

STROPHOMENA DELTOIDEA Conrad. See Rafinesquina deltoidea.

STROPHOMENA DEPRESSA Vanuxem. See Leptæna rhomboidalis.

Strophomena(?) doneti Salter.
Strophomena doneti Salter, Jour. of a Voyage in Baffins Bay and Barrow Straits, 1852.
Silurian: Wellington Channel, Arctic America.

STROPHOMENA ELEGANTULA Hall. See Plectambonites transversalis.

Strophomena(?) elliptica Conrad.
Strophomena elliptica Conrad, 3d Ann. Rep. Geol. Surv. New York, 1839, p. 64.
Niagaran: Rochester, New York.

STROPHOMENA ELONGATA James. See Strophomena planumbona elongata.

Strophomena emaciata Winchell and Schuchert.
Strophomena emaciata Winchell and Schuchert, American Geol., 9, 1892, p. 287; Geol. Minnesota, 3, 1893, p. 399, pl. 31, figs. 22-24.
Trenton (Prosser): Near Cannon Falls, Minnesota.

STROPHOMENA EUGLYPHA Salter. See Strophonella euglypha.

STROPHOMENA EUGLYPHA Roemer. See Strophonella tenuistriata.

STROPHOMENA FASCIATA Emmons. See Leptæna incrassata.

STROPHOMENA FILITEXTA Billings. See Strophomena incurvata.

STROPHOMENA FILITEXTA Meek. See Strophomena neglecta.

Strophomena fluctuosa Billings.
Strophomena fluctuosa Billings, Canadian Nat. Geol., 5, 1860, p. 57, fig. 6; Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 123, fig. 102 (Adv. sheets, 1862); Geol. Canada, 1863, p. 209, fig. 207.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 1127, figs.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 251, pl. 2a, figs. 4, 5.—Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 2, 1895, p. 119.
Richmond: Charleton Point, Anticosti (English Head-Ellis Bay); Stony Mountain, Manitoba (Stony Mountain); Texas; etc.

STROPHOMENA FLUCTUOSA Winchell and Schuchert. See Strophomena fluctuosa occidentalis.

Strophomena fluctuosa occidentalis Foerste.
Strophomena fluctuosa-occidentalis Foerste, Bull. Sci. Lab. Denison Univ., 17, 1912, p. 113, pl. 9, figs. 17a-d; pl. 10, figs. 9a-e.
Strophomena fluctuosa Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 395, pl. 31, figs. 14-17.
Richmond (Maquoketa): Spring Valley, Minnesota.

STROPHOMENA FONTINALIS White. See Dinorthis fontinalis.

STROPHOMENA FRACTA Miller. See Rafinesquina alternata fracta.

STROPHOMENA GIBBOSA James. See Leptæna gibbosa.

STROPHOMENA GILPENI Dawson. See Stropheodonta(?) gilpeni.

STROPHOMENA HALLI Sardeson. See Leptæna charlottæ.

Strophomena hallie (Miller).

Streptorhynchus(?) hallie Miller, Cincinnati Quart. Jour. Sci., 1, 1874, p. 148, figs. 14–16.

Streptorhynchus hallianum Miller, N. A. Geol. Pal., 1889, p. 378, figs. 618, 619.

Strophomena hallie Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 252.—Foerste Jour. Cincinnati Soc. Nat. Hist., 21, 1914, p. 130, pl. 2, figs. 5a, b; Bull. Sci. Lab. Denison Univ., 17, 1912, p. 38, pl. 2, figs. 1a–e, 2.

Eden (Economy, Southgate): Cincinnati, Ohio, and vicinity.

Trenton (Upper): Rogers Gap, etc., Kentucky.

STROPHOMENA HANOVERENSIS Foerste. See Strophonella striata.

Strophomena hecuba Billings.

Strophomena hecuba Billings, Canadian Nat. Geol., 5, 1860, p. 60, fig. 7; Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 126, fig. 104 (Adv. sheets, 1862); Geol. Canada, 1863, p. 209, fig. 206.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1127, fig.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 252.

Richmond (English Head, Charleton) and Gamachian: Island of Anticosti.

Strophomena higginsportensis Foerste.

Strophomena higginsportensis Foerste, Bull. Sci. Lab. Denison Univ., 17, 1912, p. 37, pl. 2, figs. 3a, b; pl. 10, fig. 4; Jour. Cincinnati Soc. Nat. Hist., 21, 1914, p. 130, pl. 1, fig. 9.

Trenton (Upper): Stony Point, east of Higginsport, Ivor, Rogers Gap, etc., Kentucky.

Strophomena(?) imbecilis Billings.

Strophomena imbecilis Billings, Pal. Fossils, 1, Geol. Surv. Canada, 1865, p. 219 (Adv. sheets, 1862).

Chazyan (Quebec—P): Four miles northeast of Portland Creek, Newfoundland.

STROPHOMENA IMBREX Pander. See Rafinesquina imbrex.

STROPHOMENA INCRASSATA Billings. See Rafinesquina incrassata.

STROPHOMENA INCRASSATA Hall. See Rafinesquina minnesotensis.

Strophomena incurvata (Shepard).

Producta incurvata Shepard, Amer. Jour. Sci., 34, 1838, p. 144, figs. 1, 2.

Orthis incurvata Castelnau, Essai sur le Syst. Sil. de l'Amérique Septentrionale, 1843, p. 38.

Strophomena convexa Owen, Geol. Expl. Iowa, Wisconsin, and Illinois, 1844, p. 70, pl. 17, fig. 2.

Streptorhynchus convexum Sardeson, Bull. Minnesota Acad. Nat. Sci., 3, 1892, p. 343.

Leptæna filitexta Hall, Pal. New York, 1, 1847, p. 111, pl. 31B, fig. 3.

Strophomena filitexta Billings, Canadian Nat. Geol., 1, 1856, p. 203, figs. 1, 2.—Hall, 12th Rep. New York State Cab. Nat. Hist., 1859, p. 70.—Billings, Geol. Canada, 1863, p. 164, fig. 142.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 251, pl. 9, figs. 1–7; pl. 9A, figs. 11–14 (not figs. 10, 15=S. neglecta).—Emmons, Amer. Geol., 1, pt. 2, 1855, p. 198, pl. 11, figs. 8, 9.

Strophomena incurvata—Continued.

Streptorhynchus filitexta Hall, 2d Ann. Rep. New York State Geol., 1883, pl. 39, figs. 1-7; pl. 42, figs. 11-14 (not figs. 10, 15=S. neglecta).—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1093, figs.

Strophomena incurvata Whiteaves, Pal. Foss. Geol. Surv. Canada, 3, pt. 2, 1895, p. 119 (loc. occ.).—Raymond, Bull. Amer. Pal., 3, 1902, p. 303, pl. 19, fig. 11.—Weller, Geol. Surv. New Jersey Pal., 3, 1903, p. 150, pl. 9, figs. 16, 17.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 223, figs. 271a-d.—Foerste, Bull. Sci. Lab. Denison Univ., 17, 1912, p. 24, pl. 11, figs. 7-9a-c.

Stones River and Black River: Green Bay, Wisconsin. Various localities in Minnesota, Iowa, Kentucky, Tennessee, Missouri, Canada, etc.

STROPHOMENA INQUASSA Sardeson. See Rafinesquina minnesotensis inquassa.

STROPHOMENA ITHACENSIS Vanuxem. See Atrypa reticularis.

STROPHOMENA JULIA Billings. See Leptæna julia.

STROPHOMENA KINGI Whitfield. See Rafinesquina kingi.

Strophomena lævis Emmons.

Strophomena lævis Emmons, Geol. New York, Rep. 2d Dist., 1842, p. 385, fig. 972; Amer. Geol., 1, pt. 2, 1855, p. 235, pl. 3, fig. 8.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1128, figs.

Black River: Great Bend, Jefferson County, New York.

STROPHOMENA LATA Miller. See Rafinesquina lata.

STROPHOMENA LEDA Billings. See Stropheodonta(?) leda.

STROPHOMENA MACRA Winchell and Marcy. See Stropheodonta macra.

Strophomena maysvillensis Foerste.

Strophomena maysvillensis Foerste, Bull. Sci. Lab. Denison Univ., 14, 1909, p. 212, pl. 4, figs. 13a-b; ibid., 17, 1912, p. 47, pl. 2, figs. 4a-j.

Maysville (Mount Hope, Fairmount): Maysville, etc., Kentucky; Ohio, Indiana, and Tennessee.

Strophomena millionensis Foerste.

Strophomena millionensis Foerste, Bull. Sci. Lab. Denison Univ., 17, 1912, p. 45, pl. 1, figs. 9a-c; pl. 10, fig. 14.

Eden: Near Million, Kentucky.

STROPHOMENA MINNESOTENSIS Winchell. See Rafinesquina minnesotensis.

Strophomena(?) minor (Walcott).

Streptorhynchus minor Walcott, Mon. U. S. Geol. Surv., 8, 1884, p. 75, pl. 11, fig. 9.

Strophomena? minor Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 432.

Upper Pogonip: Lone Mountain, near Eureka, Nevada.

Cotype.—Cat. No. 17274, U.S.N.M.

Strophomena(?) modesta Conrad.

Strophomena modesta Conrad, 3d Ann. Rep. New York Geol. Surv., 1839, p. 64.

Clinton(?): Rochester, New York.

STROPHOMENA NASUTA Conrad. See Rafinesquina nasuta.

Strophomena neglecta (James).

Strophomena filitexta Meek (not Hall), Pal. Ohio, 1, 1873, p. 83, pl. 6, fig. 5.

?Strophomena filitexta White, U. S. Geol. Geogr. Surv. west 100th Merid., 4, 1875, p. 69, pl. 4, fig. 8.

Strophomena neglecta—Continued.
Hemipronites filitextus Miller, Cincinnati Quart. Jour. Sci., 2, 1875, p. 43.
Streptorhynchus filitextus (part) Hall, 2d Ann. Rep. New York State Geol., 1883, pl. 42, figs. 10, 15 (not figs. 11–14); pl. 39, figs. 1–7.
Strophomena filitexta Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pl. 9A, figs. 10, 15 (not figs. 11–14); pl. 11A, fig. 3.
Streptorhynchus neglecta James, Paleontologist, 5, 1881, p. 41.
Strophomena neglecta Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 388.—Foerste, Amer. Geol., 31, 1903, p. 338.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 224, fig. 272b.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 934, pl. 38, figs. 1–1b.—Foerste, Bull. Sci. Lab. Denison Univ., 17, 1912, pl. 5, figs. 1, 3; pl. 7, fig. 5; pl. 9, fig. 1; pl. 11, fig. 10.
Richmond: Oxford, Clarksville, Waynesville, etc., Ohio; Indiana (Waynesville); Savannah, Illinois (Maquoketa); Manitoulin Island, Lake Huron; Anticosti; Stony Mountain, Manitoba.

STROPHOMENA NEGLECTA var. ACUTA Winchell and Schuchert. See Strophomena acuta.

STROPHOMENA NEMEA Hall and Whitfield. See Pianodema pogonipensis.

STROPHOMENA NIAGARENSIS Winchell and Marcy. See Stropheodonta profunda.

STROPHOMENA NITENS Billings. See Leptæna nitens.

Strophomena nutans Meek.
Strophomena (Hemipronites) nutans (James) Meek, Pal. Ohio, 1, 1873, p. 77, pl. 6, fig. 1.
Hemipronites nutans Miller, Cincinnati Quart. Jour. Sci., 2, 1875, p. 46.
Streptorhynchus nutans Miller, N. A. Geol. Pal., 1889, p. 378.
Streptorhynchus (Strophomena) nutans Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1094, figs.
Strophomena nutans Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 251, pl. 8, fig. 11; pl. 9A, figs. 5–7; pl. 11A, figs. 6, 7.—Foerste, Amer. Geol., 31, 1903, p. 338 (loc. occ.).—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 936, pl. 38, figs. 5–5c.—Foerste, Bull. Sci. Lab. Denison Univ., 17, 1912, p. 68, pl. 3, figs. 2a–e; pl. 9, figs. 15; pl. 10, figs. 2a–c; pl. 3, fig. 2b; pl. 11, fig. 8; pl. 10, figs. 3a–d; pl. 9, fig. 16.
Richmond (Waynesville): Butler, Warren, and Clinton Counties, Ohio; Indiana.

STROPHOMENA OBSCURA Hall. See Rafinesquina(?) obscura.

Strophomena(?) orthididea (Hall).
Leptæna orthididea Hall, Pal. New York, 2, 1852, p. 62, pl. 21, fig. 7.
Strophomena orthididea Hall, 12th Rep. New York State Cab. Nat. Hist., 1859, p. 82.
Clinton (Upper): Kirkland, Oneida County, New York.

STROPHOMENA PATENTA Hall. See Strophonella(?) patenta.

STROPHOMENA PATENTA Foerste. See Strophonella daytonensis.

STROPHOMENA PECTEN Roemer. See Schuchertella pecten.

STROPHOMENA PHILOMENA Billings. See Stropheodonta (Brachyprion) philomena.

Strophomena planoconvexa Hall.
Leptæna planoconvexa Hall, Pal. New York, 1, 1847, p. 114, pl. 31B, fig. 7.—Verneuil, Bull. Soc. Geol. France, 2d ser., 5, 1848, p. 350, pl. 4, fig. 2.

Strophomena planoconvexa—Continued.

Strophomena planoconvexa Emmons, Amer. Geology, 1, pt. 2, 1855, pl. 11, fig. 12.—Hall, 12th Rep. New York State Cab. Nat. Hist., 1859, p. 70.—Shaler, Mem. Geol. Surv. Kentucky, 1, ed., 1876, p. 26.—McCreery, Amer. Geol., 5, 1890, p. 102.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 251, pl. 9, figs. 19, 20.—Hayes and Ulrich, U. S. Geol. Surv., Folio 95, illustr. sheet, 1903, figs. 18, 19.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 938, pl. 38, figs. 3–3e.—Foerste, Bull. Sci. Lab. Denison Univ., 17, 1912, p. 54, pl. 1, figs. 1a–f, 2a, b.

Strophomena (Hemipronites) planoconvexa Meek, Pal. Ohio, 1, 1873, p. 82, pl. 6, fig. 2.

Hemipronites planoconvexa Miller, Cincinnati Quart. Jour. Sci., 2, 1875, p. 48.

Streptorhynchus planoconvexa Miller, Amer. Pal. Foss., 1877, p. 134.—Hall, 2d Ann. Rep. New York State Geol., 1883, pl. 39, figs. 19, 20.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 1095, figs.

Maysville (Fairmount): Cincinnati, Ohio, and vicinity.

Plesiotypes.—Cat. No. 35407, U.S.N.M. (Hayes and Ulrich).

Strophomena planodorsata Winchell and Schuchert.

Strophomena planodorsata Winchell and Schuchert, Amer. Geol., 9, 1892, p. 286; Geol. Minnesota, 3, 1893, p. 393, pl. 31, figs. 8–10.—Foerste, Bull. Sci. Lab. Denison Univ., 17, 1912, p. 109, pl. 7, figs. 4a–b, 7a–b, 8; pl. 9, figs. 6a–b, 7, 8a–b, 9, 11, 12, 14a–b.

Richmond: Spring Valley, Minnesota, and Iron Ridge, Wisconsin (Maquoketa); Wilmington, Illinois; and West Tennessee (Fernvale).

Strophomena planumbona (Hall).

Leptæna planumbona Hall, Pal. New York, 1, 1847, p. 112, pl. 31, fig. 4.—Verneuil, Bull. Soc. Geol. France, 2d ser., 5, 1848, p. 352, pl. 4, fig. 3.

Strophomena planumbona Emmons, Amer. Geology, 1, pt. 2, 1855, p. 198, pl. 11, fig. 2; p. 186, figs. 54–56.—Hall, Geol. Wisconsin, 1, 1862, p. 54, fig. 7.—Shaler, Mem. Geol. Surv. Kentucky, 1, 1876, pp. 13, 25, pls. 4, 5.—White, 2d Ann. Rep. Indiana Bur. Stat. and Geol., 1880, p. 483, pl. 2, figs. 13, 14; 10th Rep. Indiana State Geol., 1881, p. 115, pl. 2, figs. 13, 14.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 251, pl. 9, figs. 15–17; pl. 9A, figs. 8, 9.—Keyes, Geol. Surv. Missouri, 5, 1895, p. 73.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 939, pl. 38, figs. 4–4d.—Foerste, Bull. Sci. Lab. Denison Univ., 17, 1912, p. 73, pl. 8, figs. 1a–e; pl. 9, figs. 3a, b; pl. 4, figs. 1–4.

Strophomena planumbona var. Foerste, Bull. Sci. Lab. Denison Univ., 17, 1914, p. 260, pl. 2, figs. 4a, b.

Strophomena (Leptæna) planumbona King, Mon. Permian Foss. England, Pal. Soc., 1850, p. 103.

Strophomena (Hemipronites) planumbona Meek, Pal. Ohio, 1, 1873, p. 79, pl. 6, fig. 3.

Hemipronites planumbona Miller, Cincinnati Quart. Jour. Sci., 2, 1875, p. 45.

Streptorhynchus planumbonus Miller, Amer. Pal. Foss., 1877, p. 134.—Hall, 2d Ann. Rep. New York State Geol., 1883, pl. 39, figs. 15–17; pl. 42, figs. 8, 9.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 1095, figs.

Strophomena rugosa Winchell and Schuchert (not Rafinesque), Geol. Minnesota, 3, 1893, p. 390, pl. 31, figs. 4, 5.—Whiteaves, Pal. Foss., 3, pt. 3, 1897, p. 168.—Foerste, Amer. Geol., 31, 1903, p. 338.—Nickles, Amer. Geol., 32, 1903, p. 214.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 224, fig. 271e–f.

Strophomena planumbona—Continued.

Leptæna (n. sp.)? Owen, Geol. Surv. Wisconsin, Iowa, Minnesota, 1852, pl. 2B, fig. 21.

Richmond (Waynesville, Liberty): Lebanon and many other localities in Ohio, Kentucky, and Indiana.

Strophomena planumbona elongata (James).

Strophomena elongata James, Cat. Foss. Cincinnati Group, 1871, p. 9 (nom. nud.).

Streptorhynchus (Strophomena) elongata James, Cincinnati Quart. Jour. Sci., 1, 1874, p. 240.

Streptorhynchus elongata Mickleborough and Wetherby, Jour. Cincinnati Soc. Nat. Hist., 1, 1878, p. 76.

Strophomena planumbona elongata Foerste, Bull. Sci. Lab. Denison Univ., 17, 1912, p. 81, pl. 4, figs. 1a-l; pl. 9, figs. 4a, b.

Richmond (Waynesville): Various localities in Ohio, Indiana, and Kentucky.

Strophomena planumbona gerontica Foerste.

Strophomena planumbona-gerontica Foerste, Bull. Sci. Lab. Denison Univ., 17, 1912, p. 87, pl. 4, figs. 2a-c; pl. 11, fig. 6.

Richmond: Clarksville and Oregonia, Ohio; near Roseburg and Madison, Indiana (Waynesville); Gore Bay, Manitoulin Island, Lake Huron.

Strophomena planumbona subtenta (Hall).

Strophomena subtenta Conrad, 5th Ann. Rep. New York Geol. Surv., 1841, p. 37 (undefined).—Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 132, fig. 109 (adv. sheets, 1862).—Foerste, Amer. Geol., 31, 1903, p. 338 (loc. occ.), p. 341.

Leptæna subtenta Hall, Pal. New York, 1, 1847, p. 115, pl. 31B, fig. 9.

Hemipronites subtenta Miller, Cincinnati Quart. Jour. Sci., 2, 1875, p. 46.

Streptorhynchus subtentum Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 1097, figs.

Strophomena rugosa var. subtenta Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 393.—Whiteaves, Pal. Foss., 3, pt. 3, 1897, p. 169.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 225.

Strophomena planumbona var. subtenta Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 940, pl. 38, figs. 6, 6g.—Foerste, Bull. Sci. Lab. Denison Univ., 17, 1912, p. 84, pl. 4, figs. 4a-d; pl. 8, figs. 2a-b; pl. 9, fig. 2.

Strophomena plicata James, Cat. L. Sil. Foss. Cincinnati Group, 1871, p. 9 (nom. nud.).

Strophomena (Hemipronites) plicata Meek, Pal. Ohio, 1, 1873, p. 81, pl. 6, fig. 4.

Richmond (Waynesville—Liberty): Oxford, Clarksville, etc., Ohio; Richmond, etc., Indiana; Kentucky.

STROPHOMENA (HEMIPRONITES) PLICATA Meek. See Strophomena planumbona subtenta.

STROPHOMENA PLICIFERA Hall. See Dalmanella(?) plicifera.

STROPHOMENA PLICIFERA Emmons. See Leptæna incrassata.

Strophomena prisca Raymond.

Strophomena prisca Raymond, Amer. Jour. Sci., 20, 4th ser., 1905, p. 369; Ann. Carnegie Mus., 7, 1911, p. 234, pl. 35, figs. 2, 3.

Chazyan (Day Point): Valcour Island, New York.

STROPHOMENA PROFUNDA Hall. See Stropheodonta profunda.

STROPHOMENA RECTA Billings. See Strophomena billingsi.

STROPHOMENA RECTA Conrad. See Dinorthis (Plæsiomys) deflecta.

STROPHOMENA RETICULATA Shaler. See Leptæna reticulata.

STROPHOMENA RHOMBOIDALIS Billings. See Leptæna rhomboidalis.

STROPHOMENA RHOMBOIDALIS Meek. See Leptæna richmondensis.

STROPHOMENA RUGOSA Safford. See Leptæna rhomboidalis.

Strophomena rugosa (Rafinesque). Not recognized.
Strophomena rugosa (Rafinesque) Blainville, Malacol. Conch., 1, 1825, p. 513, pl. 53, figs. 2, 2a.—King, Mon. Permian Fossils, Pal. Soc., 1850, p. 103.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 247, figs. 13, 14.—Foerste, Bull. Sci. Lab. Denison Univ., 17, 1912, p. 87.
Strophomenes rugosa De France, Dict. des Sci. Nat., 1, 1827, p. 151, and atlas.
Silurian: North America.
Observation.—See Hall and Clarke [1892] and Foerste [1912] for discussion this species.

STROPHOMENA RUGOSA of authors. See Strophomena planumbona.

STROPHOMENA RUGOSA var. SUBTENTA Grabau and Shimer. See Strophomena planumbona subtenta.

Strophomena scofieldi Winchell and Schuchert.
Strophomena scofieldi Winchell and Schuchert, Amer. Geol., 9, April 1, 1892, p. 286; Geol. Minnesota, 3, 1893, p. 398, pl. 31, figs. 18–21.
Streptorhynchus subsulcatum Sardeson, Bull. Minnesota Acad. Nat. Sci., April 9, 1892, p. 335, pl. 4, fig. 39.
Trenton (Prosser): Cannon Falls, Minneapolis, and St. Paul, Minnesota; Beloit, Wisconsin.

STROPHOMENA (STROPHODONTA?) SEMIFASCIATA Hall. See Strophonella semifasciata.

STROPHOMENA SEMIOVALIS Vanuxem. See Plectambonites sericeus.

Strophomena(?) semiovalis Shaler.
Strophomena semiovalis Shaler, Bull. Mus. Comp. Zool., 1, 1865, p. 61.
Strophomena arcuata Shaler, ibid., p. 62.
Gamachian (Ellis Bay): Ellis Bay, Anticosti.

Strophomena septata Winchell and Schuchert.
Strophomena septata Winchell and Schuchert, Amer. Geol., 9, 1892, p. 28 Geol. Minnesota, 3, 1893, p. 390, pl. 30, figs. 1–3.
Black River (Decorah): St. Paul, Minneapolis, and Rochester, Minnesota.

STROPHOMENA SERICEA Conrad. See Plectambonites sericeus.

Strophomena(?) siluriana Davidson.
Strophomena siluriana Davidson, British Sil. Brach., Pal. Soc., 1871, p. 303, 47, figs. 1–4.—Etheridge, Quart. Jour. Geol. Soc. London, 34, 1878, p. 5
Silurian: England; Cape Leidy, lat. 79° 38′, Arctic America.

Strophomena sinuata James.
Strophomena sinuata James, Cat. Foss. Cincinnati Group, 1871, p. 9 (nom. nud.); Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 251.—Cumings, 32d An Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 941, pl. 38, figs. 2–2e.—Foerst Bull. Sci. Lab. Denison Univ., 17, 1912, p. 57, pl. 1, figs. 3a–c.

Strophomena sinuata—Continued.
Strophomena (Hemipronites) sinuata Meek, Pal. Ohio, 1, 1873, p. 87, pl. 5 (not S. sinuata Emmons, 1855).
Hemipronites sinuata Miller, Cincinnati Quart. Jour. Sci., 2, 1875, p. 50.
Streptorhynchus sinuatum Lesley, Geol. Surv. Pennsylvania, Rep. P 4 1889, p. 1096, figs.
Maysville (Fairmount): Cincinnati, Ohio, and vicinity; Tennessee.

STROPHOMENA SINUATA Emmons. See Strophomena sulcata.

STROPHOMENA SQUAMULA James. See Rafinesquina squamula.

STROPHOMENA STRIATA Hall. See Strophonella striata.

STROPHOMENA SUBPLANA Conrad. See Schuchertella subplana.

STROPHOMENA SUBTENTA Conrad. See Strophomena planumbona subtenta.

STROPHOMENA SUBTENTA Hall and Clarke. See Strophomena trentonensis.

Strophomena sulcata (Verneuil).
Leptæna sulcata Verneuil, Bull. Geol. Soc. France, 2d ser., 5, 1848, p. 350, pl. 4, fig. 4.
Strophomena (Hemipronites) sulcata Meek, Pal. Ohio, 1, 1873, p. 85, pl. 5, fig. 4.
Hemipronites sulcata Miller, Cincinnati Quart. Jour. Sci., 2, 1875, p. 48, fig. 5.
Streptorhynchus sulcatus Hall, 2d Ann. Rep. New York State Geol., 1883, pl. 39, figs. 8, 9.—Miller, N. A. Geol. Pal., 1889, p. 379, fig. 620.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 1098, figs.
Strophomena sulcata Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pl. 9, figs. 8, 9; pl. 11A, fig. 8.—Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 436.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 942, pl. 36, figs. 10–10d.—Foerste, Bull. Sci. Lab. Denison Univ., 17, 1912, p. 102, pl. 1, figs. 4a–c; pl. 11, figs. 2a–b.
Strophomena sinuata Emmons, Amer. Geology, 1, 1855, p. 199, fig. 61; Man. Geol., 1860, p. 99, fig. 88.
Richmond (Waynesville—Whitewater): Oxford, Clarksville, etc., Ohio; Richmond, etc., Indiana; Manitoulin Island, Lake Huron.

Strophomena(?) talacastrensis Kayser.
Strophomena talacastrensis Kayser, Palæontographica, Suppl., 3, 1876, p. 20, pl. 3, fig. 20.
Ordovician: Talacastra, Cordillere San Juan, Argentina.

STROPHOMENA TENUILINEATA Conrad. See Rafinesquina tenuilineata.

STROPHOMENA (ORTHOTHETES) TENUIS Foerste. See Schuchertella tenuis.

STROPHOMENA TENUISTRIATA D'Orbigny. See Leptæna richmondensis.

Strophomena thalia Billings.
Strophomena Thalia Billings, Canadian Nat. Geol., 5, 1860, p. 59; Pal. Fossils, 1, Geol. Surv. Canada (adv. sheets, 1862), 1865, p. 125, fig. 103; Geol. Canada, 1863, p. 164, fig. 143.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 251.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1134, figs.
Trenton: Ottawa, Ontario.

STROPHOMENA TRANSVERSALIS Hall. See Plectambonites transversalis.

Strophomena trentonensis Winchell and Schuchret.
Leptæna subtenta (part) Hall, Pal. New York, 1, 1847, p. 115.
Streptorhynchus subtenta Hall, 2d Ann. Rep. New York State Geol., 1883, pl. 39, fig. 18.

Strophomena trentonensis—Continued.

Strophomena subtenta Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 251, pl. 9, fig. 18.

Strophomena trentonensis Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 389, pl. 30, fig. 41.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 223, fig. 272a.

Trenton: Cannon Falls, Minneapolis, and Fountain, Minnesota; Janesville and Beloit, Wisconsin; Frankfort, Kentucky; Nashville, Tennessee; Trenton Falls, New York.

Strophomena trilobata (Owen).

Leptæna trilobata Owen, Geol. Surv. Wisconsin, Iowa, Minnesota, 1852, p. 584, pl. 2, figs. 17, 18.

Strophomena trilobata Miller, American Pal. Fossils, 1877, p. 138.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1134, figs.—Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 395, pl. 31, figs. 12, 13.—Whiteaves, Pal. Foss., 3, pt. 3, 1897, pp. 169, 241.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 223, fig. 271g–h.

Trenton: Turkey River, Iowa; Goodhue County, Minnesota (Prosser); Lake Winnipeg, Manitoba.

Holotype.—Cat. No. 17875, U.S.N.M.

STROPHOMENA? ULRICHI James. See Rafinesquina ulrichi.

STROPHOMENA UNDULATUS Vanuxem. See Leptæna rhomboidalis.

STROPHOMENA UNDULOSA Conrad. See Leptæna rhomboidalis.

STROPHOMENA UNICOSTATA Meek and Worthen. See Leptæna unicostata.

STROPHOMENA VARISTRIATA Conrad. See Stropheodonta varistriata.

Strophomena vetusta (James).

Streptorhynchus (Strophomena) vetusta James, Cincinnati Quart. Jour. Sci., 1, 1874, p. 241.

Streptorhynchus vetusta Mickelborough and Wetherby, Jour. Cincinnati Soc. Nat. Hist., 1, 1878, p. 76.—James, Paleontologist, 2, 1878, p. 15.

Strophomena vetusta Foerste, Amer. Geol., 31, 1903, p. 338, 340; Bull. Sci. Lab. Denison Univ., 17, 1912, p. 98, pl. 6, figs. 2a–h.

Richmond (Waynesville-Whitewater): Ohio, Indiana, and Kentucky.

Strophomena vetusta approximata (James).

Streptorhynchus approximata James, Paleontologist, 2, 1878, p. 15; ibid. 5, 1881, p. 43.

Strophomena approximata Foerste, Amer. Geol., 31, 1903, p. 342 (loc. occ.).

Strophomena vetusta-approximata Foerste, Bull. Sci. Lab. Denison Univ., 17, 1912, p. 101, pl. 6, figs. 1a–d.

Richmond (Liberty or Whitewater): Dearborn County, Indiana.

Strophomena vetusta precursor Foerste.

Strophomena vetusta-precursor Foerste, Bull. Sci. Lab. Denison Univ., 17, 1912, pl. 10, figs. 1a–c.

Richmond (Waynesville): Two and one-half miles west of Clarksville, Ohio, etc.

Strophomena vicina Foerste.

Strophomena vicina Foerste, Bull. Sci. Lab. Denison Univ., 14, 1909, p. 317, pl. 7, fig. 12a, b; 17, 1912, p. 28, pl. 7, fig. 2.

Trenton (Wilmore-Perryville): Becknerville, Carnestown, Flanagan, Versailles, etc., Kentucky.

Strophomena winchelli Hall and Clarke.

Streptorhynchus (Strophonella?) deltoidea Hall (not Leptæna deltoidea, 1847), 2d Ann. Rep. New York State Geol., 1883, pl. 39, figs. 10, 12–14 (not fig. 11= S. nutans).

Strophomena winchelli Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 344, pl. 9, figs. 10, 12–14; pl. 20, fig. 26.—Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 394, pl. 31, fig. 11.—Hall and Clarke, 48th Rep. New York State Mus., 2, 1895, p. 344, pl. 4, figs. 31–33; 14th Rep. State Geol. New York for 1894, 1897, p. 344, pl. 4, figs. 31–33.

Black River (Platteville): Janesville, Clifton, and Oshkosh, Wisconsin.

Strophomena wisconsinensis Whitfield.

Strophomena wisconsinensis Whitfield, Geol. Wisconsin, 4, 1882, p. 263, pl. 12, figs. 11–13.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 251, pl. 11A, figs. 1, 2.—Foerste, Bull. Sci. Lab. Denison Univ., 17, 1912, p. 108, pl. 7, figs. 1a–c; pl. 9, figs. 5a–c.

Richmond (Maquoketa): Delafield, Wisconsin.

STROPHOMENES Rafinesque. See Strophomena Blainville.

Strophomenes flexilis Rafinesque. Not recognized.

Strophomenes flexilis Rafinesque, Enumeration and Account of Some Remarkable Natural Objects in the Cabinet of Prof. Rafinesque, 1831, p. 4.

"Limestone of Ohio."

Strophomenes levigata Rafinesque. Not recognized.

Strophomenes levigata Rafinesque, Enumeration and Account of some Remarkable Natural Objects in the Cabinet of Prof. Rafinesque, 1831, p. 4.

"Kentucky limestone."

STROPHOMENES RUGOSA Defrance. See Strophomena rugosa.

STROPHONELLA Hall. Genotype: Strophomena semifasciata Hall.

Strophonella Hall, 28th Rep. New York State Mus. Nat. Hist., 1879, p. 153; 11th Rep. Indiana State Geol., 1882, p. 291.—Miller, N. A. Geol. Pal., 1889, p. 383.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 290; 11th Ann. Rep. New York State Geol., 1894, p. 282.—Grabau, Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 182; Bull. New York State Mus., 45, 1901, p. 182.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 220.

Amphistrophia Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 292; 11th Ann. Rep. New York State Geol., 1894, p. 283. (Genotype: Strophonella striata Hall.)

Strophoprian (subgenus of Strophonella) Twenhofel, Bull. Victoria Mem. Mus., 3, 1914, p. 25. (Genotype: Brachyprion geniculatum Shaler).

Strophonella costatula Hall and Clarke.

Strophonella costatula Hall and Clarke, Pal. New York, 8, pt. 2, 1895, p. 359, pl. 84, figs. 15, 16; 48th Rep. New York State Mus., 2, for 1895, 1897, p. 354, pl. 6, figs. 9, 10; 14th Rep. State Geol. New York for 1894, 1897, p. 354, pl. 6, figs. 9, 10.

Niagaran (Louisville): Louisville, Kentucky.

Strophonella daytonensis Foerste.

Strophomena patenta Foerste (not Hall), Bull. Sci. Lab. Denison Univ., 2, 1887, p. 105, pl. 8, figs. 34–37; Proc. Boston Soc. Nat. Hist., 24, 1890, p. 300, pl. 5, fig. 22.

Stroponella daytonensis—Continued.

Strophomena (Strophonella) patenta Foerste, Geol. Ohio, 7, 1895, p. 569, pl. 27, figs. 35–37.

Strophonella filistriata Foerste, 28th Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1904, p. 29.

Strophonella daytonensis Foerste, Amer. Jour. Sci., 4th ser., 18, 1904, p. 339.

Upper Medinan (Brassfield): Dayton, etc., Ohio.

Strophonella dixoni Foerste.

Strophonella dixoni Foerste, Bull. Sci. Lab. Denison Univ., 14, 1909, p. 85, pl. 2 fig. 21.

Niagaran (Brownsport): Dixon Spring and Clifton, Tennessee.

Strophonella euglypha (Hisinger).

Leptæna euglypha Hisinger, Anteckn., 1819, pl. 6, fig. 4.

Strophomena euglypha Salter, Siluria, 1859, pl. 20, fig. 9.—Davidson, Mon British Sil. Brach. Pal. Soc., 1871, p. 288, pl. 40, figs. 1–5. (See for complet bibliography.)—Etheridge, Quart. Jour. Geol. Soc. London, 34, 1878, p. 597.

Strophonella cf. euglypha Holtedahl, 2d Arct. Expl. Fram, 1898–1902, No. 32, 1914, p. 5.

Niagaran: Europe; Cape Hilgard, Cape Louis Napoleon, and North Devon, Arctic America.

STROPHONELLA FILISTRIATA Foerste. See Strophonella daytonensis.

Strophonella ganti Foerste.

Strophonella ganti Foerste, Bull. Sci. Lab. Denison Univ., 14, 1909, p. 86, pl. 2, fig. 22.

Niagaran (Brownsport): Martins Mills and Gant Place, West Tennessee.

Strophonella geniculata (Hall).

Strophodonta geniculata Hall, Pal. New York, 3, 1859, p. 483, pl. 23, figs. 6a-c.

Strophonella geniculata Maynard, Maryland Geol. Surv., Low. Dev., 1913, p. 321, pl. 59, figs. 3–5.

Helderbergian (Keyser): Devils Backbone, near Cumberland, Cash Valley, and Tonoloway, Maryland; Keyser, West Virginia.

Strophonella (Strophoprion) geniculata (Shaler).

Brachyprion geniculatum Shaler, Bull. Mus. Comp. Zool., 1, 1865, p. 63.

Stropheodonta(?) geniculata Schuchert, Bull. U. S. Geol. Surv., 87, 1907, p. 422.

Strophoprion geniculatum Twenhofel, Bull. Victoria Mem. Mus., 3, 1914, p. 25.

Anticostian (Gun River-Jupiter River): Southwest Point, etc., Anticosti.

Strophonella keyserensis Swartz.

Strophonella keyserensis Swartz, Maryland Geol. Surv., Low. Dev., 1913, p. 324 pl. 59, fig. 11.

Helderbergian (Keyser): Tonoloway, Maryland.

Strophonella laxiplicata Foerste.

Strophonella laxiplicata Foerste, Jour. Geol., 11, 1903, p. 711; Bull. Sci. Lab. Denison Univ., 14, 1909, p. 86, pl. 2, fig. 25.

Niagaran (Brownsport): Brownsport Furnace, Cerro Gordo, Bath Springs, etc. Tennessee.

Strophonella(?) patenta (Hall).

Leptæna patenta Hall, Pal. New York, 2, 1852, p. 60, pl. 21, fig. 3.—Rogers, Geo Pennsylvania, 2, pt. 2, 1858, p. 823, fig. 631.

honella(?) patenta—Continued.
ophomena patenta Hall, 12th Rep. New York State Cab. Nat. Hist., 1859, p. 82.—Hall and Whitfield, Pal. Ohio, 2, 1875, p. 115, pl. 5, fig. 10.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1130, figs.
eptorhynchus patenta Hall, 2d Ann. Rep. New York State Geol., 1883, pl. 42, figs. 16–18.
ophomena? (Strophonella?) patenta Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pp. 291, 292, pl. 9A, figs. 16–18.
ophonella(?) patenta Grabau, Bull. New York State Mus., 45, 1901, p. 182, fig. 88; Bull. Buffalo Soc. Nat. Hist., 7, 1901, p. 182, fig. 88.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 220, fig. 266.
lurian: Reynales Basin, Medina, etc., New York (Clinton); Ontario (?Lockport).

honella prolongata Foerste.
ophonella prolongata Foerste, Jour. Geol., 11, 1903, p. 710; Bull. Sci. Lab. Denison Univ., 14, 1909, p. 85, pl. 2, figs. 23A, B.
agaran (Brownsport): Near Brownsport Furnace, Dixon Spring, Gant Place, etc., West Tennessee.

honella roemeri Foerste.
ophonella roemeri Foerste, Jour. Geol., 11, 1903, p. 711; Bull. Sci. Lab. Denison Univ., 14, 1909, p. 84, pl. 2, fig. 24.
iagaran (Brownsport): Brownsport Furnace, Martins Mills, and New Era, Tennessee.

honella semifasciata (Hall).
ophomena (Strophodonta?) semifasciata Hall, Trans. Albany Inst., 4, 1863, p. 210.
ophonella semifasciata Hall, 28th Rep. New York State Mus. Nat. Hist., 1879, p. 154, pl. 22, figs. 1–3; pl. 23, figs. 7, 8; 11th Rep. Indiana State Geol., 1882, p. 292, pl. 22, figs. 1–3; pl. 23, figs. 7, 8; 2d Ann. Rep. New York State Geol., 1883, pl. 43, figs. 4, 5.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1135, figs.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pl. 12, figs. 4, 5.
agaran: Waldron, Indiana; Newsom, Tennessee (Waldron); Wisconsin (Racine).

honella semifasciata brownsportensis Foerste.
ophonella semifasiata-brownsportensis Foerste, Bull. Sci. Lab. Denison Univ., 14, 1909, p. 87, pl. 2, fig. 26.
agaran (Brownsport): Brownsport, Tennessee.

honella striata (Hall).
ophomena striata Hall, Geol. New York, Rep. 4th Dist., 1843, p. 104, fig. 3; 12th Rep. New York State Cab. Nat. Hist., 1859, p. 82.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1134, fig.
ophodonta striata Hall, 28th Rep., ibid., 1879, p. 152, pl. 23, figs. 1–6; 11th Rep. Indiana State Geol., 1882, p. 290, pl. 23, figs. 1–6.—Nettelroth, Kentucky Fossil Shells, Mem. Kentucky Geol. Surv., 1889, p. 149.
ptæna striata Hall, Pal. New York, 2, 1852, p. 259, pl. 53, fig. 7.
ophodonta (Strophonella?) striata Hall, 2d Ann. Rep. New York State Geol., 1883, pl. 43, figs. 1–3.
ophonella striata Beecher and Clarke, Mem. New York State Mus., 1, 1889, p. 25, pl. 3, figs. 1–8.—Grabau, Bull. New York State Mus., 45, 1901, p. 182, fig. 87; Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 182, fig. 87.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 220, fig. 267.

Strophonella striata—Continued.

Strophomena hanoverensis Foerste, Proc. Boston Soc. Nat. Hist., 24, 1890, p. 301, pl. 6, fig. 1.

Strophonella (Amphistrophia) striata Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 292, pl. 12, figs. 1–3.

Strophomena (Orthothetes) hanoverensis Foerste, Geol. Ohio, 7, 1895, p. 567, pl. 27, fig. 34; pl. 31, fig. 1.

Strophonella cf. striata Kindle and Breger, 28th Rep. Dep. Geol. Nat. Res. Indiana, 1904, p. 430, pl. 1, fig. 4.

Niagaran: Lockport, etc., New York (Rochester); Waldron, Indiana, and Newsom, Tennessee (Waldron); Louisville, Kentucky, etc., (Louisville); Wisconsin (Racine).

Upper Medinan (Brassfield): Dayton, etc., Ohio; Hanover, Indiana.

Plesiotypes.—Cat. No. 51335, U.S.N.M. (Nettelroth).

Strophonella tenuistriata Foerste.

Strophomena euglypha Roemer (not Salter), Sil. Fauna West Tennessee, 1860, p. 66, pl. 5, fig. 3.

Strophonella tenuistriata Foerste, Bull. Sci. Lab. Denison Univ., 14, 1909, p. 83, pl. 2, figs. 20a, b.

Niagaran (Brownsport): Near New Era, Cerro Gordo, and Martins Mills, Tennessee.

Strophonella williamsi Kindle and Breger.

Strophonella williamsi Kindle and Breger, 28th Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1904, p. 430, pl. 1, figs. 6, 7, 11.

Niagaran: Georgetown, Pendleton, Delphi, etc., Indiana.

STROPHOPRIAN Twenhofel. See Strophonella subgenus Strophoprian.

STROPHOSTYLUS Hall. Genotype: S. elegans Hall.

Strophostylus, Hall, Pal. New York, 3, 1859, p. 303, figs. 1–3; p. 304, fig. 4; p. 468; 12th Rep. New York State Cab. Nat. Hist., p. 21.—Nicholson, Rep. Pal. Prov. Ontario, pt. 1, 1874, p. 117.—Lindstrom, Kongl. Sven. Vet.-Akad. Handl., 19, No. 6, 1881, p. 61.—Zittel, Handb. Pal., 2, 1882, p. 218.—Miller, N. A. Geol. Pal., 1889, p. 427.—Koken, Neues Jahrb. Min., Geol. Pal., 6, Beilage-Band, 1889, p. 349.—Nettelroth, Kentucky Foss. Shells, Geol. Surv. Kentucky, 1889, p. 186.—Barrois, Mem. Soc. Agriculture Arts de Lille, 4th ser., 17, 1889, p. 203.—Keyes, Amer. Nat., 24, 1890, p. 1111.—Whidborne, Mon. Dev. Fauna South England, 1, Pal. Soc., 1891, p. 197.—Keyes, Proc. Iowa Acad. Sci., 1, pt. 2, 1892, p. 25; Missouri Geol. Surv., 5, 1894, p. 192.—Koken, Die Leitfossilien, Leipzig, 1896, p. 128, fig. 110, 1, 2.—Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 1063.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 677.

Strophostylus amplus Rowley.

Strophostylus amplus Rowley, Green's Cont. Indiana Pal., 1, pt. 8, 1901, p. 66, pl. 23, fig. 8.

Niagaran (Waldron): Waldron, Indiana.

STROPHOSTYLUS AMPLUS Whiteaves. See Strophostylus canadensis.

Strophostylus canadensis Bassler (new name).

Strophostylus amplus Whiteaves (not Rowley, 1901), Geol. Surv. Canada, Ann. Rep., n. s., 14, App. F, 1904, p. 53; Pal. Foss., 3, pt. 4, 1906, p. 262, pl. 30, figs. 1, 1a.

Niagaran: Ekwan River, Canada.

Strophostylus cancellatus (Hall).

Littorina cancellata Hall, Geol. Rep. 45th Dist. New York, 1843, pp. 72, 73, figs. 5, 6; tab. ill., 7, fig. 5.

Cyclonema cancellata Hall, Pal. New York, 2, 1852, p. 90, pl. 28, figs. 1a–g.—Hall and Whitfield, 27th Rep. New York State Cab. Nat. Hist., 1875, pl. 13, figs. 6, 7.—Nettelroth, Kentucky Foss. Shells, Geol. Surv. Kentucky, 1889, p. 187, pl. 20, figs. 10, 11.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 172, figs.—Kindle and Breger, 28th Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1904, p. 467, pl. 14, figs. 5, 6.—Savage, Bull. Geol. Surv. Illinois, 23, 1913, p. 55, pl. 2, fig. 4.

Silurian: Sodus and Rochester, New York (Clinton); Ontario (Cataract); Georgetown, Indiana, and Louisville, Kentucky (Niagaran).

Strophostylus cyclostomus Hall.

Strophostylus cyclostomus Hall, Trans. Albany Inst., 4, 1864, p. 218; 28th Rep. New York State Mus. Nat. Hist., doc. ed., 1875, pl. 30, figs. 1–13; pl. 31, fig. 1; mus. ed., 1879, p. 176, pl. 30, figs. 1–13; 11th Ann. Rep. Indiana Dep. Geol. Nat. Hist., 1882, p. 319, pl. 31, figs. 1–13.—Foerste, Bull. Sci. Lab. Denison Univ., 1, 1885, p. 96, pl. 14, fig. 15.—Keyes, Amer. Nat., 24, 1890, pl. 33, fig. 19.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 677, fig. 947.—Grabau, Michigan Geol. Surv., Geol. Ser., 1, 1909, p. 185, pl. 23, figs. 9–11.

Niagaran (Waldron): Waldron, Indiana; Newsom, Tennessee.

Upper Medinan (Brassfield): Dayton, Ohio.

Upper Monroan (Amherstburg): Detroit River region, Michigan.

Strophostylus cyclostomus disjunctus Hall.

Strophostylus cyclostomus var. disjunctus Hall, 28th Rep. New York State Mus. Nat. Hist., doc. ed., 1875, pl. 30, figs. 14, 15; mus. ed., 1879, p. 177, pl. 30, figs. 14, 15; 11th Ann. Rep. Indiana Dep. Geol. Nat. Hist., 1882, p. 320, pl. 31, figs. 14, 15.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1135, figs.

Niagaran (Waldron): Waldron, Indiana.

Strophostylus elevatus Hall.

Cyclonema? elevata Hall, 20th Rep. New York State Cab. Nat. Hist., 1868 (ext. Jan., 1865), p. 342, pl. 15 (6), fig. 4; rev. ed., 1870, p. 391, pl. 15, fig. 4.—Nicholson, Quart. Jour. Geol. Soc. London, 31, 1875, p. 548, pl. 26, figs. 16, 16a.—Kindle and Breger, 28th Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1904, p. 468, pl. 13, figs. 3, 5.

Niagaran: Racine, Wisconsin (Racine); Huntington, Indiana.

Strophostylus filicinctus Whiteaves.

Strophostylus filicinctus Whiteaves, Geol. Surv. Canada, Ann. Rep., n. s., 14, App. F, 1904, p. 54; Pal. Foss., 3, pt. 4, 1906, p. 263, pl. 30, figs. 4–6.

Niagaran: Ekwan River, Canada.

Strophostylus inflatus Whiteaves.

Strophostylus inflatus Whiteaves, Geol. Surv. Canada, Ann. Rep. , n. s., 14, App. F, 1904, p. 53; Pal. Foss., 3, pt. 4, 1906, p. 262, pl. 30, figs. 2, 3.

Niagaran: Ekwan River, Canada.

STROPHOSTYLUS NIAGARENSIS Keyes. See Diaphorostoma niagarense.

Strophostylus tennesseensis (Roemer).
Turbo tennesseensis Roemer, Sil. Fauna West Tennessee, 1860, p. 77, pl. 5, fig. 17.
Cyclonema tennesseense Miller, N. A. Geol. Pal., 1889, p. 401 (gen. ref.).
Niagaran (Brownsport): Decatur County, Tennessee.

Strophostylus textilis Ulrich and Scofield.
Strophostylus textilis Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 1064, pl. 82, figs. 49–54.
Holopea textilis Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 677, fig. 943.
Cyclonema textile Miller, N. A. Geol. Pal., 2d App., 1897, p. 766 (gen. ref.).
Black River: Minneapolis, St. Paul, Cannon Falls, etc., Minnesota (Decorah); Lincoln County, Missouri (Auburn).
Trenton: St. Paul, Minnesota (Prosser); Burgin, Kentucky (Flanagan).
Cotypes.—Cat. Nos. 45999–46002, U.S.N.M.

Strophostylus ventricosus (Hall).
Cyclonema ventricosa Hall (not Hall 1870), Pal. New York, 2, 1852, p. 90, pl. 28, figs. 2a–c.
Lower Clinton: Sodus, New York.

STROTOSPONGIA Ulrich and Everett.
Genotype: S. maculosa Ulrich and Everett.
Strotospongia Ulrich and Everett, Geol. Surv. Illinois, 8, 1890, p. 276.—Miller, N. A. Geol. Pal., 1889, p. 166.

Strotospongia maculosa Ulrich and Everett.
Strotospongia maculosa Ulrich and Everett, Geol. Surv. Illinois, 8, 1890, p. 277, pl. 8, figs. 1, 1a–d.
Black River (Platteville): Dixon, Illinois.
Figured sections of *holotype.*—Cat. No. 46573, U.S.N.M.

STYLARÆA Von Seebach. Genotype: S. roemeri Von Seebach.
Stylaræa Von Seebach, Zeits. d. d. Geol. Gesell., 18, 1866, p. 306.—Nicholson and Etheridge, Mon. Sil. Foss. Girvan Dist., 1878, p. 60.—Zittel, Handb. Pal., 1, 1879, p. 239.—Roemer, Leth. geog., pt. 1, Leth. Pal., 1883, p. 456.—Lindstrom, Kongl. Sven. Vet.-Akad., Handl., 32, No. 1, 1899, p. 110.—Lambe, Cont. Can. Pal., Geol. Surv. Canada, 4, pt. 1, 1899, p. 91.

Stylaræa parva (Billings).
Columnaria parva Billings, Canadian Nat. and Geol., 4, 1859, p. 428.
Stylaræa parva Lambe, Cont. Can. Pal., Geol. Surv. Canada, 4, pt. 1, 1899, p. 91, pl. 5, figs. 9, 9a, b.—Bassler, Bull. Virginia Geol. Surv., 2a, 1909, pl. 20, fig. 7.
Chazyan: Mingan Islands, Canada; Lake Champlain region; Virginia; Tennessee.

STYLIOLA Lesueur.
Styliola Hall, Pal. New York, 5, pt. 2, 1879, p. 175.—Zittel, Handb. Pal., 2, 1882, p. 313.—Nettelroth, Kentucky Foss. Shells, Geol. Surv. Kentucky, 1889, p. 157.—Miller, N. A. Geol. Pal., 1889, p. 592.—Matthew, Trans. Royal Soc. Canada, 10, sec. 4, 1893, p. 104.—Koken, Die Leitfossilien, Leipzig, 1896, p. 96, fig. 75, fig. 4.

Styliola corrugata (Matthew).
Creseis corrugata Matthew, Trans. Royal Soc. Canada, 10, sec. 4, 1893, p. 105, pl. 7, figs. 12a, b.
Cyrtotheca corrugata Matthew, Bull. Nat. Hist. Soc. New Brunswick, 10, 1892, p. 8.
Canadian (Bretonian—Div. C3d): Suspension Bridge, St. John, New Brunswick.

Styliola minuta (Matthew).

Creseis minuta Matthew, Trans. Royal Soc. Canada, 10, sec. 4, 1893, p. 105, pl. 7, figs. 11a–c.

Cyrtotheca minuta Matthew, Bull. Nat. Hist. Soc. New Brunswick, 10, 1892, p. 8.

Canadian (Bretonian—Div. C3d): Suspension Bridge, St. John, New Brunswick.

Styliola primæva Matthew.

Styliola primæva Matthew, Trans. Royal Soc. Canada, 10, sec. 4, 1893, p. 104, pl. 7, figs. 10a, b.

Canadian (Bretonian—Div. C3d): Suspension Bridge, St. John, New Brunswick.

STYLODICTYON Nicholson and Murie. Genotype: S. columnare Nicholson.

Stylodictyon Nicholson and Murie, Jour. Linn. Soc. Zool., 14, 1878, p. 221.—Zittel, Handb. Pal., 1, 1879, p. 286.—Roemer, Leth. geog., pt. 1, Leth. Pal., 1883, p. 535.—Nicholson, Mon. British Strom., Pal. Soc., 1886, p. 79.—Waagen and Wentzel, Mem. Geol. Surv. India, Pal. Indica, 13th ser., 1, 1888, p. 956.

Stylodictyon sherzeri Grabau.

Stylodictyon sherzeri Grabau, Michigan Geol. Surv., Geol. Ser., 1, 1909, p. 92, pl. 8, figs. 4–5.

Upper Monroan (Anderdon): Amherstburg, Ontario; Detroit, Michigan.

STYLONURUS Page. Genotype: S. powriei Page.

Stylonurus Page, Adv. Textb. Geol., 4th ed., 1857, p. 208.—Woodward, Geol. Mag., 1, 1864, p. 197; Mon. British Foss. Crust., Pal. Soc., 1872, p. 121.—Alth, Abhandl. der K.-K. Geol. Reichsanstalt, 7, Heft 1, 1874, p. 54.—Zittel, Handb. Pal., 7, 1885, p. 651.—Hall and Clarke, Pal. New York, 7, 1888, p. 51.—Vogdes, Ann. New York Acad. Sci., 5, 1889, p. 34, fig.—Miller, N. A. Geol. Pal., 1889, p. 568.—Laurie, Nat. Sci., 2, 1893, p. 125; Trans. Royal Soc. Edinburgh, 37, 1893, p. 519; Nat. Sci., 3, 1893, p. 124.—Clarke and Ruedemann, Mem. New York State Mus., 14, 1912, p. 278.—Clarke, Zittel-Eastman Textb. Pal., 2d ed., 1913, p. 783.

Ctenopterus new subg. of Stylonurus Clarke and Ruedemann, Mem. New York State Mus., 14, 1912, p. 287.—Clarke, Zittel-Eastman Textb. Pal., 1913, p. 784. (Genotypes: Stylonurus elegans Laurie and S. cestrotus Clarke.)

Drepanopterus Laurie, Trans. Royal Soc. Edinburgh, 1892, p. 159; Nat. Sci., 3, 1893, p. 125; Rep. 62d Meeting British Assoc. Adv. Sci., 1893, p. 725; Trans. Royal Soc. Edinburgh, 39, 1899, p. 582.—Clarke and Ruedemann, Mem. New York State Mus., 14, 1912, p. 314.—Clarke, Zittel-Eastman Textb. Pal., 1, 1913, p. 784.

Stylonurus (Ctenopterus) cestrotus (Clarke).

Eurypterus? cestrotus Clarke, Bull. New York State Mus., 107, 1907, p. 307, pl. 3, figs. 8–10.

Stylonurus (Ctenopterus) cestrotus Clarke and Ruedemann, Mem. New York State Mus., 14, 1912, p. 288, pl. 49; pl. 50, figs. 1–7.

Medinan (Shawangunk): Otisville, New York.

Stylonurus limbatus Clarke and Ruedemann.

Stylonurus limbatus Clarke and Ruedemann, Mem. New York State Mus., 14, 1912, p. 295, pl. 85, figs. 1–3, 5.

Trenton (Schenectady): Schenectady and Duanesburg, New York.

Stylonurus (Drepanopterus) longicaudatus Clarke and Ruedemann.
Drepanopterus longicaudatus Clarke and Ruedemann, Mem. New York
Mus., 14, 1912, p. 316, pl. 25, fig. 3; pls. 54–56.
Cayugan (Kokomo): Kokomo, Indiana.

Stylonurus modestus Clarke and Ruedemann.
Stylonurus modestus Clarke and Ruedemann, Mem. New York State Mu
1912, p. 415, figs. 99–101.
Chazyan (Normanskill): Catskill, New York.

Stylonurus (Ctenopterus) multispinosus Clarke and Ruedemann.
Unknown Eurypterid (genus?) Sarle, Rep. New York State Pal., 1902, p.
pl. 26, figs. 2–4.
Stylonurus (Ctenopterus) multispinosus Clarke and Ruedemann, Mem. Ne
State Mus., 14, 1912, p. 297, pl. 50, figs. 9, 10.
Cayugan (Pittsford): Pittsford, Monroe County, New York.

Stylonurus myops (Clarke).
Eurypterus maria Clarke, Bull. New York State Mus., 107, 1907, pl. 3, fig.
Eurypterus or Pterygotus, ibid., pl. 6, fig. 8.
Segments and joints of Eurypterus, Hughmilleria, etc., ibid., pl. 8, fig. 4.
Eurypterus myops Clarke, ibid., p. 306, pl. 6, figs. 1–5.—Grabau and S
N. A. Index Fossils, 2, 1910, p. 407, fig. 1713f, g.
Stylonurus myops Clarke and Ruedemann, Mem. New York State Mus., 14,
p. 300, pls. 51, 52, 53, figs. 1–5, 7.
Medinan (Shawangunk): Otisville, New York; Delaware Water Gap, Pe
vania.

SUBRETEPORA D'Orbigny. See Chasmatopora Eichwald.

SUBRETEPORA DICHOTOMA Miller. See Thamniscus dichotomus.

SUBULITES Conrad. Genotype: S. elongatus C
Subulites (Conrad MS.) Hall, Pal. New York, 1, 1847, p. 182.—Meek
Worthen, Geol. Surv. Illinois, 2, 1866, p. 373; ibid., 3, 1868, p. 361.—
ström, Kongl. Sven. Vet.-Akad. Handl., 19, No. 6, 1881, p. 193.—
Handb. Pal., 2, 1882, p. 239.—Miller, N. A. Geol. Pal., 1889, p. 427.—K
Neues Jahrb. Min. Geol. Pal., 6, Beilage-Band, 1889, p. 451; Die L
silien, Leipzig, 1896, p. 400, 806; Bull. Acad. Imp. Sci. St. Petersbu
1897, p. 209.—Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 1
Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 696.

SUBULITES ABBREVIATA Hall. See Cyrtospira abbreviata.

Subulites beloitensis Ulrich and Scofield.
Subulites beloitensis Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p.
pl. 81, figs. 9–11.
Black River (Platteville): Beloit, Wisconsin.
Holotype.—Cat. No. 46003, U.S.N.M.

Subulites benedicti Miller.
Subulites benedicti Miller, 17th Ann. Rep. Dep. Geol. Nat. Res. Indiana,
p. 604, (694?), pl. 14, fig. 6. (adv. sheets, 1891).
Niagaran (Laurel?): Franklin County, Indiana.

Subulites brevis Winchell and Marcy.
Subulites brevis Winchell and Marcy, Mem. Boston Soc. Nat. Hist., 1, 18
100, pl. 2, fig. 19; p. 108.

Subulites brevis—Continued.
Subulites (Polyphemopsis) brevis Meek and Worthen, Geol. Surv. Illinois, 3, 1868, p. 362, pl. 5, fig. 6.
Niagaran (Racine): Chicago, Illinois.

SUBULITES CALCIFERA Billings. See Fusispira calcifera.

Subulites canadensis Ulrich.
Subulites canadensis Ulrich, Geol. Minnesota, 3, pt. 2, 1897, p. 1071, pl. 81, fig. 3.
Black River: Gloucester, near Ottawa, Ontario.
Holotype.—Cat. No. 46004, U.S.N.M.

Subulites compactus Whiteaves.
Subulites compactus Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 1, 1884, p. 16, pl. 3, fig. 2; pl. 7, fig. 6.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1142, figs.—Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 2, 1895, p. 96.
Subulites compactus? var. Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 2, 1895, p. 96, pl. 14, figs. 4, 5.
Niagaran (Guelph): Durham, Ontario.

Subulites conradi Ulrich and Scofield.
Subulites conradi Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 1071, pl. 81, figs. 4 and 5.
Black River: Goodhue County, Minnesota (Platteville); near Ottawa, Ontario.
Holotype.—Cat. No. 46005, U.S.N.M.

SUBULITES DAPHNE Billings. See Fusispira daphne.

Subulites directus Foerste.
Subulites directus Foerste, Geol. Surv. Ohio, Pal. 7, 1893, p. 554, pl. 37A, fig. 3a, b (5).
Upper Medinan (Brassfield): Huffmans Quarry, near Dayton, Ohio.

Subulites dixonensis Ulrich and Scofield.
Subulites dixonensis Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 1071, pl. 81, figs. 6–8.
Black River (Platteville): Dixon, Illinois.
Holotype.—Cat. No. 46006, U.S.N.M.

Subulites elongatus Conrad.
Subulites elongata (Conrad MS.) Emmons, Geol. New York, 2, 1842, p. 392, fig. 3.—Owen, Amer. Jour. Sci. Arts, 47, 1844, p. 365, fig. 3.—Hall, Pal. New York, 1, 1847, p. 182, pl. 39, figs. 5a–c.—Roemer, Neues Jahrb. Min., Geol., Pal., 1848, p. 177.—Lincklaen, 14th Rep. New York State Cab. Nat. Hist., 1861, pl. 2, fig. 3.—Hall, Rep. Geol. Surv. Wisconsin, 1862, p. 39, fig. 5.—Billings, Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 17, 53 (loc. ref.); Geol. Canada, Geol. Surv. Canada, 1863, p. 183, fig. 179.—Chamberlin, Geol. Wisconsin, 1, 1883, p. 157, fig.—Miller, N. A. Geol. Pal., 1889, p. 428, fig. 718.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1142, fig.—Keyes, Missouri Geol. Surv., 5, 1894, p. 215.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 696.
Subulites (Loxonema) elongata Emmons, Manual Geol., 1860, p. 98, fig. 87.
Loxonema subelongata D'Orbigny, Prodr. de Pal., 1, 1849, p. 5 (nov. nom. for Subulites elongata Hall).—Emmons, Amer. Geol., 1, pt. 2, 1855, p. 163, pl. 6, fig. 21.

Subulites elongatus—Continued.
Subulites sp. undet. (?elongatus Conrad) Ulrich and Scofield, Geol. Minn 3, pt. 2, 1897, pl. 81, figs. 1, 2.
Trenton: Watertown, Middleville, etc., New York; Canada.
Plesiotype.—Cat. No. 46007, U.S.N.M. (Ulrich and Scofield.)

Subulites exactus Sardeson.
Subulites exactus Sardeson, Bull. Minnesota Acad. Nat. Sci., 4, 1896, pl. 6, fig. 14; Jour. Geol., 11, 1903, p. 481, fig. 16.
Canadian (Shakopee): Shakopee, and near Cannon Falls, Minnesota.

Subulites gracilis Miller.
Subulites gracilis Miller, Jour. Cincinnati Soc. Nat. Hist., 5, 1882, p. 11 fig. 5.
Niagaran (Racine): Chicago, Illinois.

SUBULITES INFLATUS Meek and Worthen. See Fusispira inflata.

Subulites nanus Ulrich.
Subulites nanus Ulrich, Geol. Minnesota, 3, pt. 2, 1897, p. 1072, pl. 81, figs. Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 697, fig. 1001b.
Black River (Lowville): Lebanon, Tennessee; High Bridge, Kentucky.
Holotype.—Cat. No. 46075, U.S.N.M.

SUBULITES NOTATUS Billings. See Cyrtospira notatus.

SUBULITES OBESUS Whitfield. See Fusispira obesa.

SUBULITES PARVULUS Billings. See Cyrtospira parvula.

Subulites parvus Ulrich.
Subulites parvus Ulrich, Geol. Minnesota, 3, pt. 2, 1897, p. 1072, pl. 81, fig
Black River (Lowville): High Bridge, Kentucky.
Holotype.—Cat. No. 46008, U.S.N.M.

Subulites pergracilis Ulrich and Scofield.
Subulites pergracilis Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, pl. 81, figs. 12–15.
Trenton (Prosser): Wykoff, Minnesota.
Cotypes.—Cat. No. 46009, U.S.N.M.

SUBULITES (POLYPHEMOPSIS) PLANI-LATERALIS Foerste. See Meekospira planil

Subulites prolongatus Raymond.
Subulites prolongatus Raymond, Amer. Jour. Sci., 4th ser., 20, 1905, p. 37 Carnegie Mus., 4, 1908, p. 210, pl. 54, fig. 13.
Chazyan (Crown Point): Sloop Bay, Valcour Island, New York.

SUBULITES PSYCHE Billings. See Fusispira psyche.

SUBULITES RAYMONDI Hudson. See Cyrtospira raymondi.

Subulites regularis Ulrich and Scofield.
Subulites regularis Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, pl. 81, figs. 35 and 36; pl. 82, figs. 47 and 48.—Grabau and Shimer, N. A Fossils, 1, 1909, p. 696, fig. 1001a.—Bassler, Bull. Virginia Geol. Su 1909, pl. 23, fig. 5.
Black River: Cannon Falls, Minnesota (Platteville); High Bridge, Ke Southwest Virginia (Lowville); near Ottawa, Ontario.
Cotypes.—Cat. No. 46010, U.S.N.M.

Subulites richardsoni Billings.
Subulites richardsoni Billings, Geol. Surv. Canada, Rep. Progr. for 1853–1856, 1857, p. 306; Cat. Sil. Foss., Anticosti, Geol. Surv. Canada, 1866, p. 17 (loc. ref.).
Richmond (Charleton) and Gamachian: Charleton Point, etc., Anticosti.

SUBULITES SUBCONICUS Miller. See Meekospira subconica.

SUBULITES SUBFUSIFORMIS Billings. See Fusispira subfusiformis.

Subulites terebriformis Hall and Whitfield.
Subulites terebriformis Hall and Whitfield, Geol. Surv. Ohio Pal., 7, 1875, p. 141, pl. 8, fig. 6.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1143, fig.
Niagaran (Guelph): Clinton, Green County, Ohio.

SUBULITES TORTILIS Miller. See Cyrtospira tortilis.

SUBULITES VENTRICOSA Hall. See Cyrtospira ventricosa.

SUBULITES WYKOFFENSIS Miller. See Cyrtospira wykoffensis.

SUECOCERAS Holm. See Cameroceras Conrad.

Sulcopora D'Orbigny. Not recognized.
Sulcopora D'Orbigny, Prodr. de Pal., 1, 1850, p. 22.—Emmons, Amer. Geol., 1, pt. 2, 1855, p. 206.—Pictet, Traite de Pal., 2d ed., 4, 1857, p. 169.
Observation.—See Geol. Surv. Illinois, 8, 1890, p. 687, for discussion of this genus.

SULCOPORA FENESTRATA Ulrich. See Rhinidictya fenestrata.

SYMBATHOCRINITES TENNESSEEÆ Troost. See Synbathocrinus tennesseensis.

SYMBATHOCRINUS of authors. See Synbathocrinus Phillips.

SYMPHYSURUS Goldfuss. Genotype: Asaphus palpebrosus Dalman.
Symphysurus Goldfuss, Neues Jahrb. Min., 1843, pp. 541, 552.—Burmeister, Org. Tril., London, 1846, p. 106.—Hawle and Corda, Abh. d. k. bohmischen Gesell. d. Wiss., 5 (extract), 1847, p. 53.—Barrande, Neues Jahrb. Geol. Min. Pal., 1850, p. 778.—Angelin, Pal. Scandinavica, 3d ed. (1854), 1878, p. 60.—Pictet, Traite de Pal., 2d ed., 2, 1854, p. 513.—Salter, Mon. British Tril. Pal. Soc., 1866, p. 147.—Zittel, Handb. Pal., 2, 1885, p. 609.—Miller, N. A. Geol. Pal., 1889, p. 568.—Koken, Die Leitfossilien, Leipzig, 1896, p. 26, fig. 17, fig. 4.—Lindström, Kongl. Sven. Vet.-Akad. Handl., 34, No. 8, 1901, p. 26.—Raymond, Trans. and Proc. Roy. Soc. Canada, 5, 3d ser., sec. 4, 1912, p. 117; Zittel-Eastman Textb. Pal., 1913, p. 719.

Symphysurus apolonista Lake.
Symphysurus Apolonista Lake Quart. Jour. Geol. Soc. London, 62, 1906, p. 427, pl. 40, figs. 2, 3.
Ordovician: Near Apolo, Bolivia.

Symphysurus convexus (Cleland).
Asaphus convexus? Cleland, Bull. Amer. Pal., 3, 1900, p. 128 (256), pl. 16, fig. 4.
Bathyurus sp. Cleland, Bull. Amer. Pal., 3, 1900, pl. 16, fig. 9.
Illænurus columbiana Weller, Pal. New Jersey, 3, 1903, p. 133, pl. 5, figs. 1–4.
Bathyurus? levis. Cleland, Bull. Amer. Pal., 4, 1903, p. 36, pl. 2, figs. 1, 2.

Symphysurus convexus—Continued.

Symphysurus convexus Raymond, Ann. Carnegie Mus., 7, No. 1, 1910, p. 42, pl. 14, figs. 14–16.

Canadian: Fort Hunter, New York (Tribes Hill); Columbia, New Jersey (Upper Beekmantown).

Symphysurus eurekensis (Walcott).

Illænurus Eurekensis Walcott, Mon. U. S. Geol. Surv., 8, 1884, p. 97, pl. 12, fig. 4, 4a.

Symphysurus eurekensis Frech, Leth. geog., Leth. Pal., 2, 1 Lief., 1897, pl. 1b, fig. 6.

Lower Pogonip: Ridge east of Hamburg Ridge, Eureka District, Nevada.

Cotypes.—Cat. No. 24570, U.S.N.M.

Symphysurus(?) goldfussi Walcott.

Smyphysurus? Goldfussi Walcott, Mon. U. S. Geol. Surv., 8, 1884, p. 95, pl. 12, fig. 16.

Upper Pogonip: McCoys Ridge, Eureka District, Nevada.

Holotype.—Cat. No. 24648, U.S.N.M.

Symphysurus illænoides (Billings).

Asaphus Illænoides Billings, Canadian Nat. Geol., 5, 1860, p. 323; Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 414.

Symphysurus Illænoides Raymond, Ann. Carnegie Mus., 7, No. 1, 1910, p. 441 (gen. ref); Trans. and Proc. Roy. Soc. Canada, 3d ser., 5, sec. 4, 1912, p. 120, pl. 3, fig. 5.

Ozarkian? (Levis-erratic): Point Levis, Quebec.

SYNAPTOPHYLLUM MULTICAULE Grabau. See Diphyphyllum? multicaule.

SYNBATHOCRINITES GRANULATUS Troost. See Synbathocrinus granulatus.

SYNBATHOCRINITES TENNESSEEÆ Troost. See Synbathocrinus troosti.

SYNBATHOCRINUS Phillips. Genotype: S. conicus Phillips.

Synbathocrinus Phillips, Geol. Yorkshire, pt. 2, 1836, p. 206.—Austin (part), Mon. Rec. and Foss. Crin., 1847, p. 93.—D'Orbigny, Prodrome Pal. Strat., 1, 1850, p. 156.—Owen and Shumard, Geol. Surv. Iowa, Wisconsin, and Minnesota, 1852, p. 597.—Hall, Geol. Rep. Iowa, 1, pt. 2, 1858, p. 559, fig. 76.—Meek and Worthen, Proc. Acad. Nat. Sci. Philadelphia, 1868, p. 324; Amer. Jour. Sci. Arts, 48, 1869, p. 24; Geol. Rep. Illinois, 5, 1873, pp. 324, 437; ibid., 6, 1875, p. 514.—Wachsmuth, Amer. Jour. Sci., 14, 1877, pp. 182, 184; Ann. Mag. Nat. Hist., 5th ser., 1, 1878, p. 454.—Wetherby, Jour. Cincinnati Soc. Nat. Hist., Extr. 7, 1880.—Wachsmuth and Springer, Proc. Acad. Nat. Sci. Philadelphia, 1886, p. 90 (Rev. Pal., pt. 3, sec. 2, p. 166).—Miller, N. A. Geol. Pal., 1889, p. 284.—Springer, Zittel-Eastman Textb. Pal., 2d ed., 1913, p. 209.

Symbathocrinus D'Orbigny, Prodr. de Pal., 1, 1849, p. 157.—Pictet, Traite de Pal., 4, 1857, p. 333.—Schultze, Denk. Kais. Akad. Wiss. Math. Nat. Cl., 26, Abth., 2, 1867, p. 138, fig. 2.—Zittel, Handb. Pal., 1879, p. 349.—Wachsmuth and Springer, Proc. Acad. Nat. Sci. Philadelphia, 1887, p. 106; ibid., 1888, p. 350; ibid., 1890, p. 354.—Bather, Kongl. Sven. Vet.-Akad. Handl., 25, 1893, pp. 21, 25, fig. 4; Nat. Sci., 12, 1898, p. 343; Treatise on Zool. (Lankester), 1900, p. 152, fig. 65.—Zittel, Grundzuge, Pal., 1, 1910, p. 147.

Synbathocrinus granulatus (Troost).

Synbathocrinites granulatus Troost, Amer. Jour. Sci. Arts, 2d ser., 8, p. 419; Proc. Amer. Assoc. Adv. Sci., 2, 1850, p. 61 (nom. nud.).

Synbathocrinus granulatus—Continued.
Synbathocrinus granulatus Shumard, Trans. Acad. Sci. St. Louis, 2, 1866, p. 397.
Symbathocrinus granulatus Wachsmuth and Springer, Proc. Acad. Nat. Sci. Philadelphia, 1886, p. 90 (Rev. Pal., pt. 3, sec. 2, p. 166).—Wood, Bull. U. S. Nat. Mus., 64, 1909, p. 27, pl. 9, figs. 4, 7, 8.
Niagaran (Brownsport): Decatur County, Tennessee.
Holotype and *plesiotype*.—Cat. No. 39938, U.S.N.M.

Synbathocrinus tennesseensis (Roemer).
Symbathocrinites tennesseeæ Troost (in part), Proc. Amer. Assoc. Adv. Sci., 2, 1850, p. 61 (nom. nud.).
Symbathocrinus tennesseeæ Wachsmuth and Springer, Rev. Pal., 3, 1886, pp. 166, 174.
Symbathocrinus tennesseensis Roemer, Die Sil. Fauna West. Tennessee, 1860, p. 55, pl. 4, figs. 6a, b.—Wood, Bull. U. S. Nat. Mus., 64, 1909, p. 26.
Niagaran (Brownsport): Decatur County, Tennessee.
Plesiotype.—Cat. No. 39939, U.S.N.M. (Troost's type of S. tennesseeæ).

Synbathocrinus troosti (Wood).
Synbathocrinites Tennesseeæ (part) Troost, Amer. Jour. Sci. Arts, 2d ser., 8, 1849, p. 419; Proc. Amer. Assoc. Adv. Sci., 2, 1850, p. 61 (nom. nud.).
Symbathocrinus troosti Wood, Bull. U. S. Nat. Mus., 64, 1909, p. 27, pl. 9, fig. 9.
Niagaran (Brownsport): Decatur County, Tennesee.
Holotype.—Cat. No. 39930, U.S.N.M.

SYNDYOGRAPTUS Ruedemann. Genotype: S. pecten Ruedemann.
Syndyograptus Ruedemann, Mem. N. Y. State Mus., 11, pt. 2, 1908, p. 266.

Syndyograptus pecten Ruedemann.
Syndyograptus pecten Ruedemann, Mem. New York State Mus., 11, pt. 2, 1908, pp. 267–268, pl. 15, figs. 5, 6, fig. 184, 185.
Chazyan (Normanskill): Glenmont, New York.

SYNHOMALONOTUS Pompeckj. Genotype: Calymmene tristani Brongniart.
Synhomalonotus Pompeckj, Neues Jahrb. Min. Geol. Pal., 1, 1898, p. 240.

Synhomalonotus christyi (Hall).
Calymene christyi Hall, 13th Rep. New York State Cab. Nat. Hist., 1860, p. 118; 15th Rep., ibid., 1862, pl. 10, figs. 2–5.—Miller, Cincinnati Quart. Jour. Sci., 1, 1874, p. 141.—Hall and Whitfield, Geol. Surv. Ohio, Pal., 2, 1875, p. 107, pl. 4, figs. 13–15.
Synhomalonotus christyi Pompeckj, Neues Jahrb. Min., Geol. Pal., 1, 1898, p. 247.
Richmond (Waynesville): Oxford, Ohio.

SYNTROPHIA Hall and Clarke. Genotype: Triplesia lateralis Whitfield.
Syntrophia Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 270; pt. 2, 1893, p. 216; 13th Ann. Rep. New York State Geol., 1895, p. 836.—Huene, Verh. d. Russ.-Kais. Min. Gesell. z. St. Petersburg, 38, 1900, p. 228, fig. 2.—Schuchert, Zittel-Eastman Textb. Pal., 1900, p. 320; 2d ed., 1913, p. 392.—Walcott, Proc. U. S. Nat. Mus., 28, 1905, p. 288.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 270.

Syntrophia arachne (Billings).
Stricklandia? Arachne Billings, Pal. Fossils, 1, Geol. Surv. Canada, 1865, p
fig. 77, p. 419 (adv. sheets, 1862).
Syntrophia arachne Hall and Clarke, Nat. Hist. New York, 8, pt. 2, 1893, p.
Ozarkian? (Levis—erratics): Point Levis, Quebec.

Syntrophia arethusa (Billings).
Stricklandinia? Arethusa Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865,
fig. 78 (adv. sheets, 1862).
Syntrophia arethusa Hall and Clarke, Pal. New York, 8, pt. 2, 1893, p. 21
Ozarkian? (Levis—erratics): Point Levis, Quebec.

Syntrophia(?) armanda (Billings).
Orthis Armanda Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 303, fig.
Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 217.
Syntrophia(?) armanda Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 44
Canadian (Beekmantown): Phillipsburg, Quebec.

Syntrophia calcifera (Billings).
Camarella calcifera Billings, Canadian Nat. Geol., 6, 1861, p. 318, fig. 3;
Canada, 1863, p. 231, fig. 247; Pal. Foss., 1, Geol. Surv. Canada, 1865, p.
Meek, 6th Ann. Rep. U. S. Geol. Surv. Terr., 1873, p. 464.
Triplecia? calcifera Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 270.
Syntrophia? calcifera Hall and Clarke, Pal. New York, 8, pt. 2, 1893, p. 2
62, fig. 24.—Walcott, Mon. U. S. Geol. Surv., 51, 1912, p. 800, pl. 104, fig
Canadian: Point Levis, Phillipsburg, etc., Quebec (Beekmantown): Cow
Newfoundland (Quebec—P).
Plesiotypes.—Cat. Nos. 17279, 52476, U.S.N.M.

SYNTROPHIA CALCIFERA Grabau and Shimer. See Syntrophia nundina.

Syntrophia campbelli Walcott.
Syntrophia campbelli Walcott, Smiths. Misc. Coll., 53, 1908, pp. 107-108,
figs. 9, 9a–c; Mon. U. S. Geol. Surv., 51, 1912, p. 801, figs. 73a–f.
Canadian (Beekmantown): Bunker Hill, six miles northeast of Roge
Hawkins County, Tennessee.
Cotypes.—Cat. No. 52480, U.S.N.M.

Syntrophia lateralis (Whitfield).
Triplesia lateralis Whitfield, Bull. Amer. Mus. Nat. Hist., 1886, p. 303,
figs. 9–11.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1225,
Seely, Vermont State Geol. Rep., 7, 1910, pl. 62, figs. 9–11.
Syntrophia lateralis Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 270;
8, pt. 2, 1893, p. 216, pl. 62, figs. 1–10; 13th Ann. Rep. State Geol. New
2, 1894, pp. 836, 837, pl. 45, figs. 7–12.—Weller, Geol. Surv. New J
Pal., 3, 1903, p. 126, pl. 4, figs. 14, 15.—Walcott, Mon. U. S. Geol. Sur
1912, p. 802, fig. 11, p. 299; pl. 102, figs. 6, 6a–g.
Canadian (Beekmantown): Fort Cassin, Vermont; Fort Hunter, New
Columbia, New Jersey.
Plesiotypes.—Cat. No. 33447, U.S.N.M.

SYNTROPHIA MULTICOSTA Hudson. See Clitambonites multicostus.

Syntrophia nundina Walcott.
Triplesia calcifera Walcott (not Billings), Mon. U. S. Geol. Surv., 8, 188
75–76, pl. 11, figs. 7 and 8.
Syntrophia calcifera Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 27
325.

yntrophia nundina—Continued.
Syntrophia nundina Walcott, Proc. U. S. Nat. Mus., 28, 1905, p. 292; Mon. U. S. Geol. Surv., 51, 1912, p. 802, pl. 102, figs. 4, 4a–d.
Lower Pogonip: Eureka District, Eureka County, Nevada.
Holotype and *plesiotypes*.—Cat. Nos. 17280, 17281, U.S.N.M.

yntrophia palmata Cleland.
Syntrophia palmata Cleland, Bull. Amer. Pal., 3, 1900, p. 130 (258), pl. 17, figs. 14–17; ibid., 4, 1903, p. 20.
Canadian (Tribes Hill): Fort Hunter, New York.

yphonia pyriformis Owen. Not recognized.
Syphonia piriformis Owen, Geol. Expl. Iowa, Wisconsin, Illinois, 2d ed., 1844, p. 78, pl. 14, fig. 4.
Niagaran: Iowa and Wisconsin.

YRINGOCRINUS Billings. See Dendrocystites Barrande.

YRINGOLITES Hinde. Genotype: S. huronensis Hinde.
Syringolites Hinde, Geol. Mag., dec. 2, 6, 1879, p. 244.—Nicholson, Tab. Corals Pal. Period, 1879, p. 178.—Roemer, Leth. geog., pt. 1, Leth. Pal., 1883, p. 424.—Miller, N. A. Geol. Pal., 1889, p. 205.—Nicholson, Geol. Mag., dec. 3, 4, 1889, p. 433.—Lambe, Cont. Can. Pal., Geol. Surv. Canada, 4, pt. 1, 1899, p. 45.

yringolites huronensis (Hinde).
Syringopora Huronensis Hinde, Geol. Mag., dec. 2, 6, 1879, p. 245, fig. A–D; p. 246.
Syringolites Huronensis Nicholson, Tab. Corals Pal. Period, 1879, p. 179, fig. 27.—Roemer, Leth. geog., pt. 1, Leth. Pal., 1883, p. 424, fig. 101.—Nicholson, Geol. Mag., dec. 3, 6, 1889, p. 433, fig. 1.—Lambe, Cont. Can. Pal., Geol. Surv. Canada, 4, pt. 1, 1899, p. 45.—Foerste, Bull. Kentucky Geol. Surv., 7, 1906, p. 301, pl. 2, fig. 3, pl. 4, fig. 2.
Niagaran: Manitoulin Island, Lake Huron; Irvine, Kentucky, and vicinity (Waco).

YRINGOPHYLLUM Edwards and Haime.
Genotype: Madrepora organum Linnæus.
Sarcinula Dana, Expl. Exp. Zooph., 1846, p. 363 (not Lamarck).
Syringophyllum Milne-Edwards and Haime, British Foss. Corals, Intr., 1850, p. 72; Mon. Polyp. Foss., Terr. Pal., 1851, p. 449 (Arch. Mus. Hist. Nat. 5).

yringophyllum organum (Linnæus).
Madrepora organum Linnæus, Syst. Nat., ed. 12, 1767, p. 1278.
Sarcinula organon Schweigger, Handb. der Naturg., 1820, p. 420.—Eichwald, Zool. Spec., 1, 1829, p. 189.
Sarcinula organum Goldfuss, Petref., 1826, p. 73, tab. 24, fig. 10.—Holl, Handb. der Petref., 1830, p. 401.—Blainville, Dict., 60, 1830, p. 314.—Man., p. 348.—Morren, Desc. Corall. Belg., 1832, p. 67.—Hisinger, Leth. suec., 1837, p. 97, tab. 28, fig. 8.—Eichwald, Silur. Schicht. Esthland, 1840, p. 199.—Etheridge, Quart. Jour. Geol. Soc. London, 34, 1878, p. 586.
Astreopora organum D'Orbigny, Prodr. de Pal., 1, 1850, p. 50.
Syringophyllum organum Milne-Edwards and Haime, British Foss. Corals, Intr., 1850, p. 62; Mon. Polyp. Foss., Terr. Pal., 1851, p. 450 (Arch. Mus. Hist. Nat., 5).
Silurian: England, Gothland, etc.; Cape Hilgard, Arctic America.

SYRINGOPORA Goldfuss. Genotype: S. reticulata Goldfuss.

Syringopora Goldfuss, Petr. Germ., 1826, p. 75; ibid., 2d ed., 1862, p. 71.—Eaton, Geol. Textb., 2d ed., 1832, p. 41.—McCoy, Syn. Char. Carb. Foss. Ireland, 1844, p. 189.—Dana, Wilkes's U. S. Expl. Exped., 1838-1842, 7, Zoophytes, 1846, p. 637.—Edwards and Haime, Mon. d. Polyp. Foss. d. Terr. Pal., 1851 (Arch. du Mus. d'Hist. Nat., 5), p. 155, 285.—Hall, Pal. New York, 2, 1862, p. 118.—McCoy, British Pal. Rocks and Foss., 1854, p. 27.—Pictet, Traite de Pal., 2d ed., 4, 1857, p. 445.—Billings, Geol. Surv. Canada, Rep. Progr. for 1857, 1858, p. 169; Canadian Nat. Geol., 3, 1858, p. 423; Canadian Jour., n. s., 4, 1859, p. 115.—Milne-Edwards, Hist. Nat. d. Corall., 3, 1860, p. 290.—Kunth, Zeits. d. d. geol. Gesell., 21, 1869, p. 191.—Koninck, Animaux Foss. Carb. Belgique (Mem. l'Acad. Royale Sci. de Belgique), 39, 1872, p. 118.—Nicholson, Rep. Pal. Prov. Ontario, pt. 1, 1874, p. 39.—Rominger, Geol. Surv. Michigan, 3, pt. 2, 1876, p. 79.—Nicholson, Trans. Royal Soc. Edinburgh, 27, 1876, p. 241.—Lindstrom, Ann. Mag. Nat. Hist., 4th ser., 18, 1876, p. 14.—Nicholson, Tab. Corals Pal. Period, 1879, p. 207.—Thomson, Proc. Royal Soc. Edinburgh, 11, 1881, p. 219; Proc. Phil. Soc. Glasgow, 14, 1883, p. 328.—Roemer, Leth. geog., pt. 1, Leth. Pal., 1883, p. 489.—Koch, Palæontographica, 29, 1883, pp. 335, 344.—Nicholson, Ann. Mag. Nat. Hist., 5th ser., 13, 1884, p. 30.—Miller, N. A. Geol. Pal., 1889, p. 206.—Beecher, Trans. Connecticut Acad. Arts Sci., 8, 1891, p. 210.—Sardeson, Neues Jahrb. Min., Geol., Pal., Beilage-Band, 10, 1896, p. 330.—Lambe, Cont. Can. Pal., Geol. Surv. Canada, 4, pt. 1, 1899, p. 49.—Grabau and Shimer, N. A. Index Fossils, 1, 1906, p. 82.—Zittel-Eastman Textb. Pal., 1900, p. 101; 2d ed., 1913, p. 116.

Drymopora Davis, Kentucky Fossil Corals, Geol. Surv. Kentucky, pt. 2, 1885, pl. 70 (not defined). (Genotype: D. fascicularis Davis.)

Syringopora annulata Rominger.

Syringopora annulata Rominger, Geol. Surv. Michigan, 3, pt. 2, 1876, p. 81, pl. 32, lower tier.

Niagaran: Drift of Ann Arbor, Michigan; Point Detour, Lake Huron.

Syringopora bifurcata Lonsdale.

Syringopora bifurcata Lonsdale, Murch. Sil. Syst., 1839, p. 685, pl. 15 bis, figs. 11, 11, 11b.—Lambe, Cont. Canadian Pal., 4, pt. 1, Geol. Surv. Canada, 1899, p. 51.

Niagaran: Europe; Cape Wingfield, Lake Huron; Isle of Mann (Burnt Island), Lake Temiscaming, Quebec.

Helderbergian: L'Anse a la Vielle, etc., Quebec.

Syringopora compacta Billings.

Syringopora compacta Billings, Geol. Surv. Canada, Rep. Progr. for 1857, 1858, p. 169; Canadian Nat. Geol., 3, 1858, p. 423; Geol. Canada, Geol. Surv. Canada, 1863, p. 306, fig. 307.—Chamberlin, Geol. Wisconsin, 1, 1883, p. 190, fig.—Lambe, Cont. Can. Pal., Geol. Surv. Canada, 4, pt. 1, 1899, p. 54.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1147, fig.

Silurian or Helderbergian: L'Anse a la Vielle, Quebec; Wisconsin.

Syringopora cooperi Grabau.

Syringopora cooperi Grabau, Michigan Geol. Surv., Geol. Ser., 1, 1909, p. 118, pl. 14, fig. 1.

Upper Monroan (Flat Rock): Salt shaft, Oakwood (Detroit), Michigan.

Syringopora dalmani Billings.

Syringopora Dalmanii Billings, Canadian Nat. Geol., 3, 1858, p. 423; Geol. Surv. Canada, Rep. Progr. for 1857, 1858, p. 169; Geol. Canada, Geol. Surv. Canada,

gopora dalmani—Continued.
1863, p. 306, fig. 306.—Chamberlin, Geol. Wisconsin, 1, 1883, p. 190, fig.—Lambe, Cont. Can. Pal., Geol. Surv. Canada, 4, pt. 1, 1899, p. 51, pl. 2, fig. 2.
iagaran: Head of Lake Temiscaming, Quebec; Wisconsin.

gopora debilis Billings.
yringopora debilis Billings, Canadian Nat. Geol., 3, 1858, p. 424; Geol. Surv. Canada, Rep. Progr. for 1857, 1859, p. 170.
ilurian or Helderbergian: L'Anse a la Vielle, Quebec.

gopora (Drymopora) fascicularis (Davis).
rymopora fascicularis Davis, Kentucky Fossil Corals, Geol. Surv. Kentucky, pt. 2, 1885, pl. 70, figs. 1-4; pl. 74, fig. 7.
yringopora (Drymopora) fascicularis Foerste, Proc. Boston Soc. Nat. Hist., 24, 1890, p. 338.
iagaran (Louisville): Louisville, Kentucky.
pper Medinan (Brassfield): Ludlow Falls and Fair Haven, Ohio.

gopora fibrata Rominger.
yringopora fibrata Rominger, Geol. Surv. Michigan, 3, pt. 2, 1876, p. 82, pl. 30, fig. 3.
iagaran: Point Detour, Drummond Island, Lake Huron; Louisville, Kentucky (Louisville); Indiana; Iowa.

IGOPORA HURONENSIS Hinde. See Syringolites huronensis.

IGOPORA INFUNDIBULA Whitfield. See Cystostylus infundibulum.

gopora lineata Owen. Not recognized.
yringopora (lineata?) Owen, Geol. Expl. Iowa, Wisconsin, Illinois, 2d ed., 1844, p. 76, pl. 13, fig. 2.
iagaran: Iowa and Wisconsin.

gopora microfundulus Grabau.
yringopora microfundulus Grabau, Michigan Geol. Surv., Geol. Ser., 1, 1909, p. 117, pl. 15, figs. 7, 8.
pper Monroan (Anderdon): Salt shaft at Detroit, Michigan.

IGOPORA? MULTICAULIS Hall. See Diphyphyllum? multicaule.

gopora parallela Etheridge.
yringopora parallela Etheridge, Quart. Jour. Geol. Soc. London, 34, 1878, p. 583, pl. 26, fig. 1.
iagaran: Dobbin Bay, Arctic America.

gopora ramulosa Troost. Not recognized.
yringopora ramulosa (Goldfuss) Troost, 5th Geol. Rep. Tennessee, 1840, p. 69.
ountain limestone: Near Nashville, Tennessee.

gopora retiformis Billings.
yringopora retiformis Billings, Geol. Surv. Canada, Rep. Progr. for 1857, 1858, p. 170; Canadian Nat. Geol., 3, 1858, p. 424; Geol. Canada, Geol. Surv. Canada, 1863, p. 306, fig. 304.—Nicholson and Hinde, Canadian Jour., n. s., 14, 1874, p. 139.—Nicholson, Rep. Pal. Prov. Ontario, pt. 2, 1874, p. 58.—Chamberlin, Geol. Wisconsin, 1, 1883, p. 190, fig.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1148, fig.—Lambe, Cont. Can. Pal., Geol. Surv. Canada, 4, pt. 1, 1899, p. 52, pl. 2, fig. 3.—Grabau and Shimer, N. A. Index Fossils, 1, 1906, p. 82, fig. 131.
Niagaran: Isthmus Bay, Lake Huron; Owen Sound, etc., Ontario; Wisconsin.

SYRINGOPORA TENELLA Rominger. See Ceratopora tenella.

Syringopora verticillata Goldfuss.

Syringopora verticillata Goldfuss, Petrefacta Germ., 1826, p. 76, pl. 25, figs. 6a, b; 2d ed., 1862, p. 71.—Eaton, Geol. Textb., 2d ed., 1832, p. 41, pl. 5, fig. 63.—Edwards and Haime, Mon. d. Polyp. Foss. d. Terr. Pal., 1851 (Arch. du Mus. d'Hist. Nat., 5), p. 291.—Billings, Geol. Surv. Canada, Rep. Progr. for 1857, 1858, p. 170; Canadian Nat. Geol., 3, 1858, p. 423.—Milne-Edwards, Hist. Nat. d. Corall., 3, 1860, p. 291.—Billings, Geol. Canada, Geol. Surv. Canada, 1863, p. 306, fig. 305.—Rominger, Geol. Surv. Michigan, 3, pt. 2, 1876, p. 80, pl. 30, figs. 1, 2.—Whitfield, Geol. Wisconsin, 4, 1882, p. 272, pl. 14, fig. 6.—Chamberlin, Geol. Wisconsin, 1, 1883, p. 190, fig.—Hall, 12th Ann. Rep. Indiana Dep. Geol. Nat. Hist., 1883, p. 254, pl. 3, fig. 5.—Lambe, Cont. Can. Pal., Geol. Surv. Canada, 4, pt. 1, 1899, p. 50.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1148, fig.—Grabau and Shimer, N. A. Index Fossils, 1, 1906, p. 82.—Lambe, Cruise of the "Neptune," App. 4, 1906, p. 325.

Niagaran: Drummond Island, Lake Huron; Point Detour, etc., Michigan; Wisconsin; Lake Temiscaming, Quebec; Anticosti; Southampton Island, Arctic America.

SYRINGOSTROMA Nicholson. Genotype: S. columnare Nicholson.

Syringostroma Nicholson, Geol. Surv. Ohio, Pal., 2, 1875, p. 251.—Dawson, Quart. Jour. Geol. Soc. London, 35, 1879, p. 56.—Nicholson, Mon. British Strom., Pal. Soc., 1886, p. 97.—Miller, N. A. Geol. Pal., 1889, p. 166.—Girty, 48th Rep. New York State Mus., 2, 1895, p. 289; 14th Rep. State Geol. New York for 1894, 1897, p. 289.—Parks, Univ. Toronto Studies, Geol. Ser., No. 6, 1909, p. 8.

Syringostroma barretti Girty.

Syringostroma barretti Girty, 48th Rep. New York State Mus., 2, 1895, p. 296, pl. 7, figs. 5, 6.—Parks, Univ. Toronto Studies, Geol. Ser., No. 6, 1909, pp. 16–19.—Swartz, Maryland Geol. Surv., Low. Dev., 1913, p. 224, pl. 28, figs. 3, 4.

Stromatopora (Syringostroma) barretti Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 45, fig. 72.

Helderbergian: Indian Ladder, New York (Coeymans); south of Cookerly, Maryland (Keyser).

Syringostroma centrotum Girty.

Syringostroma centrotum Girty, 48th Rep. New York State Mus., 2, 1894, p. 293, pl. 7, figs. 1, 2.—Parks, Univ. Toronto Studies, Geol. Ser., No. 6, 1909, p. 12–14.—Swartz, Maryland Geol. Surv., Low. Dev., 1913, p. 225, pl. 28, figs. 5, 6; pl. 30, fig. 2.

Stromatopora (Syringostroma) centrota Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 45, fig. 72.

Helderbergian: Herkimer County, New York; near signal station, Warrior Mountain, Maryland (Keyser).

Syringostroma niagarense Parks.

Syringostroma niagarense Parks, Univ. Toronto Studies, Geol. Ser., No. 5, 1908, p. 52, pl. 10, figs. 1, 2, 5, 7.

Niagaran: North shore of Lake Michigan; Drummond Island; drift at Ann Arbor, Michigan.

Holotype.—Cat. No. 36933, U.S.N.M.

Syringostroma parallelum Parks.

Syringostroma parallelum, Parks, Univ. Toronto Studies, Geol. Ser., No. 5, 1908, p. 54, pl. 10, figs. 3, 4, 6.

Niagaran: Drummond Island, Lake Huron.

Holotype.—Cat. No. 36934, U.S.N.M.

TÆNIASTER Billings. Genotype: Palæocoma spinosa Billings.

Tæniaster Billings, Geol. Surv. Canada, dec. 3, 1858, p. 80.—Chapman, Canadian Jour., n. s., 6, 1861, p. 517.—Wright, Mon. British Foss. Echinod., Oolitic, 2, pt. 1 (Pal. Soc. for 1861), 1862, pp. 24, 34.—Chapman, Expos. Min. Geol. Canada, 1864, p. 111.—Hall, 20th Rep. New York State Cab. Nat. Hist., 1868, p. 300; rev. ed., 1870, p. 338.—Zittel, Handb. Pal., 1, 1879, p. 445.—Nicholson and Etheridge, Mon. Sil. Foss. Girvan Dist., 1880, p. 323.—Stürtz, Neues Jahrb. Min., Geol., Pal., 2, 1886, p. 150; Palæontographica, 32, 1886, pp. 78, 83.—Miller, N. A. Geol. Pal., p. 285.—Gregory, Geol. Mag., dec. 3, 6, 1889, p. 26.—Sturtz, Verh. naturh. Ver. preuss. Rheinl., etc., 1893, p. 20.—James, Jour. Cincinnati Soc. Nat. Hist., 18, 1895, pp. 138, 139.—Gregory, Proc. Zool. Soc. London for 1896, 1897, p. 1035; Treat. Zool., 3, Echinoderma, 1900, p. 250.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 715.—Schuchert, Bull. U. S. Nat. Mus., 88, 1915, p. 216.

Tæniura Gregory (not Tæniura Muller and Heule, 1837), Proc. Zool. Soc. London, 1897, p. 1035.

æniaster cylindricus (Billings).

Palæocoma cylindrica Billings, Geol. Surv. Canada, Rep. Progress for 1853–56, 1857, p. 292.

Tæniaster cylindricus Billings, Geol. Surv. Canada, dec. 3, 1858, p. 81, pl. 10, figs. 4a–b.—Wright, Mon. British Foss. Echinod., Oolitic, 2, pt. 1 (Palaeontogr. Soc. for 1861), 1862, p. 34.—Parks, Trans. Canadian Inst., 8, 1908, p. 371.—Schuchert, Bull. U. S. Nat. Mus., 88, 1915, p. 220, pl. 36, figs, 2, 3, text fig. 18.

Tæniura cylindricus Springer, Mem. Geol. Surv. Canada, 15P, 1911, p. 45 (loc. occ.).—Gregory, Proc. Zool. Soc. London for 1896, 1897, p. 1035.

Lapworthura cylindrica Parks, Trans. Canadian Inst., 8, 1908, p. 371.

Trenton (Curdsville): Ottawa and Kirkfield, Ontario.

æniaster elegans Miller.

Tæniaster elegans Miller, Jour. Cincinnati Soc. Nat. Hist., 5, 1882, p. 41, pl. 1, figs. 6, 6a, 6b, 6c.—James, ibid., 18, 1895, p. 139.—Parks, Trans. Canadian Inst., 8, 1908, pp. 365, 371.—Schuchert, Bull. U. S. Nat. Mus., 88, 1915, p. 221.

Protaster elegans Parks, Trans. Canadian Inst., 8, 1908, p. 368.

Richmond (Waynesville or Liberty): Waynesville, Ohio.

Cotypes.—Cat. No. 40878, U.S.N.M.

ÆNIASTER GRANULIFERUS Cumings. See Alepidaster granuliferus.

æniaster meafordensis Foerste.

Tæniaster meafordensis Foerste, Bull. Sci. Lab. Denison Univ., 17, 1914, p. 326, pl. 4, figs. 5–7.—Schuchert, Bull. U. S. Nat. Mus., 88, 1915, p. 221.

Richmond: Near Meaford, Ontario.

æniaster schohariæ Ruedemann.

Tæniaster schohariæ Ruedemann, Bull. New York State Mus., 162, 1912, pl. 3, fig. 1.—Schuchert, Bull. U. S. Nat. Mus., 88, 1915, p. 220.

Trenton (Schenectady): Near Schoharie Junction, New York.

Tæniaster spinosus (Billings).

Palæocoma spinosa Billings, Geol. Surv. Canada, Rep. Progr. for 1853–56, 1857, p. 292.

Tæniaster spinosus Billings, Geol. Surv. Cañada, dec. 3, 1858, p. 81, pl. 10, figs. 3a–3d.—Miller, N. A. Geol. Pal., 1889, p. 285, fig. 439.—Schuchert, Bull. U. S. Nat. Mus., 88, 1915, p. 219, pl. 36, fig. 1, text fig. 17.

Trenton: Falls of Montmorency, Canada.

TÆNIODICTYA Ulrich. Genotype: T. ramulosa Ulrich.

Tæniodictya Ulrich, Geol. Surv. Illinois, 8, 1890, p. 393.—(Ulrich, in press), Miller, N. A. Geol. Pal., 1889, p. 327.—Simpson, 14th Ann. Rep. State Geol. New York for 1894, 1897, p. 533.—Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 47.—Bassler, Bull. U. S. Geol. Surv., 292, 1906, p. 57.

Tæniodictya schucherti Bassler.

Tæniodictya schucherti Bassler, Bull. U. S. Geol. Surv., 292, 1906, p. 57, pl. 27, figs. 10–13.

Clinton (Rochester): Grimsby, Ontario.

Holotype.—Cat. No. 35772, U.S.N.M.

TÆNIURA Gregory. See Tæniaster Billings.

TANAOCRINUS Wachsmuth and Springer.

Genotype: T. typus Wachsmuth and Springer.

Tanaocrinus Wachsmuth and Springer, Mem. Mus. Comp. Zool., Harvard, 20, 1897, p. 185.—Springer, Zittel-Eastman Textb. Pal., 2d ed., 1913, p. 193.

Tanaocrinus typus Wachsmuth and Springer.

Tanaocrinus typus, Wachsmuth and Springer, Mem. Mus. Comp. Zool., Harvard, 20, 1897, p. 186, pl. 9, figs. 7a–c.

Glyptocrinus typus Miller, N. A. Geol. Pal. (2d app.), 1897, p. 746 (gen. ref.).

Richmond (Waynesville or Liberty): Warren County, Ohio.

TAONURUS ARCHIMEDES Sarle. See Daedalus archimedes.

TARPHYCERAS Hyatt. Genotype: T. prematurum Hyatt.

Tarphyceras Hyatt, Amer. Phil. Soc. Proc., 32, 1894, p. 433.—Miller, N. A. Geol. Pal., 2d App., 1897, p. 778.—Ruedemann, Bull. New York State Mus., 90, 1906, p. 464.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 66.

Tarphyceras aucoini Hyatt.

Tarphyceras aucoini Hyatt, Proc. Amer. Phil. Soc., 32, 1894, p. 435, pl. 4, figs. 17–22.

Canadian (Quebec): Port au Port, Newfoundland.

Tarphyceras calciferus (Billings).

Nautilus calciferus Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 258.

Tarphyceras? calciferus Hyatt, Proc. Amer. Phil. Soc., 32, 1894, p. 435 (gen. ref.).

Canadian (Quebec-F, G): Port au Choix and Cape Norman, Newfoundland.

Tarphyceras champlainense (Whitfield).

Nautilus? champlainensis Whitfield, Bull. Amer. Mus. Nat. Hist., 1, 1886, p. 329, pl. 31, figs. 1–3.—Seely, Vermont State Geol. Rep., 7, 1910, pl. 53, figs. 1,3.

Eurystomites champlainensis Schröder, Pal. Abhandl., 5, Heft 4, 1891, p. 28.

Tarphyceras champlainensis Hyatt, Proc. Amer. Phil. Soc., 32, 1894, p. 438, pl. 4, figs. 4–11.—Ruedemann, Bull. New York State Mus., 90, 1906, pp. 468, 452.

Canadian (Beekmantown): Fort Cassin, Vermont.

Plesiotypes.—Cat. No. 25657, U.S.N.M. (Hyatt).

arphyceras clarkei Ruedemann.
Tarphyceras clarkei Ruedemann, Bull. New York State Mus., 90, 1906, p. 470, pl. 22, figs. 27–31.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 67, fig. 1276.
Canadian (Beekmantown): Valcour and Valcour Island, New York.

arphyceras extensum Hyatt.
Tarphyceras extensum Hyatt, Proc. Amer. Phil. Soc., 32, 1894, p. 438, pl. 6, figs. 1–4.
Canadian (Quebec): Port au Choix, Newfoundland.

arphyceras farnsworthi (Billings).
Lituites farnsworthi Billings (part), Geol. Surv. Canada Pal. Foss., 1, 1861, p. 21.
Tarphyceras farnsworthi Hyatt, Proc. Amer. Phil Soc., 32, 1893, p. 435.—Ruedemann, Bull. New York State Mus., 90, 1906, p. 465.
Canadian (Beekmantown): Phillipsburg, Quebec.

arphyceras macdonaldi Hyatt.
Tarphyceras macdonaldi Hyatt, Proc. Amer. Phil. Soc., 32, 1894, p. 435.
Canadian (Beekmantown): Near Lexington, Virginia.
Holotype.—Cat. No. 25656, U.S.N.M.

arphyceras multicameratum Ruedemann.
Tarphyceras multicameratum Ruedemann, Bull. New York State Mus., 90, 1906, p. 472, pl. 19, fig. 3; pl. 23, fig. 2, figs. 32, 33.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 67, fig. 1277.
Chazyan (Valcour): Near Chazy and Valcour Island, New York; Isle la Motte, Vermont.

arphyceras perkinsi (Whitfield).
Nautilus perkinsi Whitfield, Bull. Amer. Mus. Nat. Hist., 9, 1897, p. 182, pl. 5, figs. 1, 2.—Seely, Vermont State Geol. Rep., 7, 1910, pl. 55, figs. 1, 2.
Tarphyceras perkinsi Ruedemann, Bull. New York State Mus., 90, 1910, pp. 469, 452.
Canadian (Beekmantown): Fort Cassin, Vermont.

arphyceras prematurum Hyatt.
Tarphyceras prematurum Hyatt, Proc. Amer. Phil. Soc., 32, 1894, p. 437, pl. 4, figs. 12–16.
Canadian (Quebec): Port au Port, Newfoundland.

arphyceras seelyi (Whitfield).
Lituites seeleyi Whitfield, Bull. Amer. Mus. Nat. Hist., 1, 1886, p. 330. pl. 31, fig. 2; pl. 32, fig. 3.—Seely, Vermont State Geol. Rep., 7, 1910, pl. 53, fig. 2; pl. 54, fig. 3.
Tarphyceras seelyi Hyatt, Amer. Phil. Soc. Proc., 32, 1894, p. 435 (gen. ref.).—Ruedemann, Bull. New York State Mus., 90, 1906, p. 465, pl. 19, figs. 1, 2; pl. 20, fig. 5, pl. 21; pl. 24, fig. 3, figs. 25, 26.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 67, fig. 1275.
Canadian (Beekmantown): Fort Cassin, Vermont; Valcour, New York.

AXOCRINUS ELEGANS Miller. See Protaxocrinus elegans.

AXOCRINUS LÆVIS Miller. Protaxocrinus lævis.

'ECHNOPHORUS Miller. Genotype: T. faberi Miller
Technophorus Miller, N. A. Geol. Pal., 1889, p. 514.—Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 612.—Clarke, Mem. New York State Mus., 6, 1904, p. 406, expl. pl. 9.
Ribeirella Schubert and Waagen, Jahrb. d. k. k. geol. Reichsanst., 53, 1903, pp. 33, 45.—Clarke, Mem. New York State Mus., 6, 1904, p. 406, expl. pl. 9.

Technophorus bellistriatus Branson.
Technophorus bellistriatus Branson, Trans. Acad. Sci. St. Louis, 18, 1909, p. 47, pl. 7, fig. 21.
Black River (Auburn-Decorah): Lincoln County, Missouri.

Technophorus cancellatus Ruedemann.
Technophorus cancellatus Ruedemann, Bull. New York State Mus., 42, 1901, p. 672, pl. 1, figs. 19–25; ibid., Bull. 162, 1912, p. 122.
Trenton (Snake Hill): Snake Hill, Saratoga County, New York.

Technophorus cincinnatiensis Miller and Faber.
Technophorus cincinnatiensis Miller and Faber, Jour. Cincinnati Soc. Nat. Hist., 17, 1894, p. 147, pl. 8, figs. 15, 16.—Miller, N. A. Geol. Pal., 2d App., 1897, p. 785, fig. 1457.
Eden (Economy): Cincinnati, Ohio, and vicinity.

Technophorus divaricatus Ulrich.
Technophorus divaricatus Ulrich, Amer. Geol., 10, 1892, p. 102, pl. 7, figs. 15, 16.—Miller, N. A. Geol. Pal., 1st App., 1892, p. 702, fig. 1260.—Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 616, pl. 40, figs. 37, 38.
Black River (Decorah): Near Cannon Falls, Minnesota.

Technophorus extenuatus Ulrich.
Technophorus extenuatus Ulrich, 19th Ann. Rep. Geol. Minnesota, 1892, p. 222, fig. 8; Geol. Minnesota, 3, pt. 2, 1894, p. 614, pl. 37, fig. 34; p. 611, fig. 45i.
Black River (Decorah): Minneapolis, Minnesota.

Technophorus faberi Miller.
Technophorus faberi Miller, N. A. Geol. Pal., 1889, p. 514, fig. 930.—Miller and Faber, Jour. Cincinnati Soc. Nat. Hist., 17, 1894, p. 27, pl. 1, fig. 20.
Maysville (Fairmount): Sharon, Hamilton County, Ohio.

Technophorus filistriatus Ulrich.
Technophorus filistriatus Ulrich, Amer. Geol., 10, 1892, p. 101, pl. 7, figs. 11, 12; Geol. Minnesota, 3, pt. 2, 1894, p. 615, pl. 40, figs. 35, 36.
Black River (Decorah): Near Cannon Falls, Minnesota.
Holotype.—Cat. No. 46312, U.S.N.M.

Technophorus plicatus (Billings).
Ischyrinia plicata Billings, Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 52.
Technophorus plicata Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 613 (gen. ref.).
Gamachian (Ellis Bay): Junction Cliff, Anticosti.

Technophorus punctostriatus Ulrich.
Technophorus punctostriatus Ulrich, Geol. Surv. Ohio, 7, 1893, p. 685, pl. 47, figs. 10–12.
Maysville (Fairmount): Covington, Kentucky.
Cotypes.—Cat. No. 46313, U.S.N.M.

Technophorus punctostriatus quincuncialis Foerste.
Technophorus punctostriatus quincuncialis Foerste, Bull. Sci. Lab. Denison Univ., 17, 1914, p. 316, pl. 2, figs. 13a, b.
Cincinnatian (Pulaski): Chambly, Quebec.

ιnophorus subacutus Ulrich.
Γechnophorus subacutus Ulrich, Amer. Geol., 10, 1892, p. 101, pl. 7, figs. 13, 14; Geol. Minnesota, 3, pt. 2, 1894, p. 614, pl. 40, figs. 33, 34.
Black River (Platteville): Minneapolis, Minnesota.
Plastotype.—Cat. No. 46314, U.S.N.M.

ιnophorus? yoldiaformis (Ulrich).
Nuculites yoldiaformis Ulrich, Jour. Cincinnati Soc. Nat. Hist., 2, 1879, p. 24, pl. 7, fig. 20.
ſechnophorus? yoldiaformis Ulrich, 19th Ann. Rep. Geol. Nat. Hist. Surv. Minnesota, 1892, p. 223; Geol. Surv. Ohio, 7, p. 685, pl. 47, figs. 13, 14.
ldeu (Economy): Covington, Kentucky.
Iolotype.—Cat. No. 46315, U.S.N.M.

JLIPORA Hall. See Loculipora Hall.

ANIUM Rauff. Genotype: Cyathophycus subsphericum Walcott.
'eganium Rauff, Palæontographica, 40, 1894, p. 256.
phærodictya Hall and Clarke, Mem. New York State Mus., 11, 1899, p. 26. (Genotype: Cyathophycus subsphericum Walcott.)

nium subsphericum (Walcott).
yathophycus subsphericus Walcott, Amer. Jour. Sci. Arts, 3d ser., 22, 1881, p. 395; Trans. Albany Inst., 10, 1883, p. 19, pl. 2, figs. 17 (adv. sheets, 1879).—James, J. F., Jour. Cincinnati Soc. Nat. Hist., 7, 1884, p. 128, pl. 5, fig. 5.—Hall, 35th Rep. New York State Mus. Nat. Hist., 1884, p. 468.—Ulrich, Amer. Geol., 1, 1888, p. 324.
'eganium subsphericum Rauff, Palæontographica, 40, 1894, p. 256, pl. 4, figs. 3, 4.
phærodictya subsphærica Hall and Clarke, Mem. New York State Mus., 11, 1899, p. 766, pl. 1, figs. 14-22.
ſtica: Trenton, Oneida County, New York.
'*lesiotype*.—Cat. No. 26441, U.S.N.M.

IPHUS Barrande. Genotype: T. fractus Barrande.
'elephus Barrande, Syst. Sil. du Centre Boheme, 1, 1852, p. 890, pl. 18.—Angelin, Pal. Scandinavica, 3d ed., Holmiae (1854), 1878, p. 91.—Pictet, Traite de Pal., 2d ed., 2, 1854, p. 527.—Zittel, Handb. Pal., 2, 1885, p. 599.—Miller, N. A. Geol. Pal., 1889, p. 568.—Reed, Geol. Mag., dec. 4, 5, 1898, p. 499.

ιhus americanus Billings.
'elephus Americanus Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 291, fig. 281.
hazyan (Quebec—N, P): Table Head, four miles northeast Portland Creek and Pistolet Bay, Newfoundland.

NOMYA Hall. See Ctenodonta Salter.

NOMYA ANATINIFORMIS Hall. See Pterotheca anatiniformis.

NOMYA (PALÆONEILO) CUNEATA Simpson. See Ctenodonta diminuens.

NOMYA (NUCULA) LEPIDA Sardeson. See Ctenodonta similis.

NOMYA PULCHELLA Clarke. See Ctenodonta clarkei.

NOMYA (NUCULA?) SOCIALIS Foerste. See Ctenodonta ohioensis.

NOMYA VENTRICOSA Hall. See Ctenodonta gibberula.

TEMNOGRAPTUS Nicholson. Genotype: T. multiplex Nicholson.

Temnograptus Nicholson, Geol. Mag., dec. 2, 3, 1876, p. 248.—Zittel, Handb. Pal., 1, 1879, p. 299.—Wiman, Bull. Geol. Inst. Univ. Upsala, 2, pt. 2, 1896, p. 265.—Roemer and Frech, Leth. geog., 1 Theil, Leth. Pal., 1, 3 Lief, 1897, p. 596.—Elles and Wood, Mon. British Grapt., Pal. Soc., 1902, p. 85.—Ruedemann, Mem. New York State Mus., 7, pt. 1, 1904, pp. 618, 619.

Temnograptus noveboracensis Ruedemann.

Temnograptus cf. multiplex (Nicholson) Ruedemann, New York State Pal. Ann. Rep., 1902, p. 556.

Temnograptus noveboracensis Ruedemann, Mem. New York State Mus., 7, pt. 1, 1904, pp. 619, 620, pl. 5, figs. 15–20, figs. 35, 36.

Canadian: Deepkill, Rensselaer County, New York (Deepkill, Tetragraptus zone); Point Levis, Quebec (Levis, Diplograptus dentatus zone).

Temnograptus ramulus (Hall).

Graptolithus ramulus Hall, Geol. Surv. Canada, dec. 2, 1865, p. 108, pl. 12, figs. 9, 10.

Graptolithus (Monoprion) ramulus Hall, 20th Rep. New York State Cab. Hist. 1868, p. 226; rev. ed. 1870, p. 261; p. 223.

Dichograpsus ramulus Gurley, Jour. Geol., 4, 1896, p. 95 (gen. ref.).

Canadian (Levis): Point Levis, Quebec.

TENTACULITES Schlotheim. Genotype: T. scalaris Schlotheim.

Tentaculites Schlotheim Petrefakten, 1820, p. 377.—Castlenau, Essai Syst. Sil. l'Amerique Septent., 1843, p. 33.—McCoy, British Pal. Rocks Foss., 1854, p. 63.—Pictet, Traité de Pal., 2d ed., 3, 1855, p. 321.—Ludwig, Paleontographica, 11, 1864, p. 316.—Barrande, Syst. Sil. du Centre Boheme, 3, 1867, p. 110.—Nicholson, Geol. Mag., 9, 1872, p. 446; Amer. Jour. Sci., 3d ser., 3, 1872, p. 205.—Hall, Pal. New York, 5, pt. 2, 1879, p. 155, 165.—Vine, Quart. Jour. Geol. Soc. London, 38, 1882, pp. 378–385.—Zittel, Handb. Pal., 2, 1882, p. 314.—Walcott, Mon. U. S. Geol. Surv., 8, 1884, p. 196.—Nettelroth, Kentucky Foss. Shells, Geol. Surv. Kentucky, 1889, p. 156.—Miller, N. A. Geol. Pal., 1889, p. 393.—Nicholson, Trans. Edinburgh Geol. Soc., 6, 1890, p. 66.—Grabau, Bull. Buffalo Soc. Nat. Sci., 6, 1899, p. 282.—Pilsbry, Zittel-Eastman Textb. Pal., 1, 1900, p. 490; 2d ed., 1913, p. 572.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 10.

Tentaculites canadensis Ami.

Tentaculites canadensis Ami, Proc. and Trans. Nova Scotian Inst. Sci., 8, 1895, p. 412.

Silurian: Antigonish County, Nova Scotia.

TENTACULITES DISTANS Hall. See Cornulites distans.

TENTACULITES FLEXUOSA Hall. See Cornulites flexuosus.

Tentaculites gyracanthus (Eaton).

Echinus gyracanthus Eaton, Geological Textb., 1832.

Tentaculites gyracanthus Hall, Pal. New York, 3, 1859, p. 137, pl. 6, figs. 22, 23; ibid., Pal., 5, pt. 2, 1879, p. 160; ibid., Pal., 7, 1888, p. 5, pl. 114, figs. 7-13.—Weller, Geol. Surv. New Jersey, Pal., 3, 1903, p. 264, pl. 24, figs. 19-20.—Grabau, Bull. New York State Mus., 92, 1906, p. 116, fig. 25.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 10, fig. 1220.—Maynard, Maryland Geol. Surv., Low. Dev., 1913, p. 486, pl. 87, fig. 11.

Tentaculites gyracanthus—Continued.

Tentaculites ornatus (Sowerby?) Vanuxem, Geol. New York, 3, 1842, p. 112, fig. 3.—Hall, Geol. New York, 4, 1843, p. 142, fig. 3; tab. ill. 20, fig. 3.—Mather, Geol. New York, 1, 1843, p. 349, fig. 3.—Owen, Amer. Jour. Sci. Arts, 2d ser., 1846, p. 47, fig. 3.—Rogers, Geol. Pennsylvania, 2, pt. 2, 1858, p. 824, fig. 638.—Emmons, Man. Geol., 1860, p. 113, fig. 102.—Lincklaen, 14th Rep. New York State Cab. Nat. Hist., 1861, p. 58, pl. 9, fig. 3.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 1177, figs.

Tentaculites irregularis Castelnau, Essai Syst. Sil. l'Amerique Septent., 1843, p. 34, pl. 10, fig. 5.—Hall, Pal. New York, 5, pt. 2, 1879, p. 156.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 1176, figs.

Cayugan (Manlius): Albany County, etc., New York.

Helderbergian (Manlius transition—Keyser): New York, New Jersey, Pennsylvania, Maryland, etc.

TENTACULITES INCURVUS Shumard. See Cornulites incurvus.

TENTACULITES IRREGULARIS Hall. See Tentaculites gyracanthus.

Tentaculites minutus Hall.

Tentaculites minutus Hall, Geol. New York, 4, 1843, pp. 72, 74, fig. 11; tab. ill. 7, fig. 11; ibid., Pal., 2, 1852, p. 183, pl. A41, figs. 8a–e; ibid., Pal., 7, Sup., 1888, p. 5, pl. 114, figs. 1, 2.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1177, figs.

Lower Clinton: Clinton, New York.

Tentaculites neglectus Nicholson and Hinde.

Tentaculites neglectus Nicholson and Hinde, Canadian Jour., n. s., 14, 1874, p. 145.—Nicholson, Rep. Pal. Prov. Ontario, pt. 2, 1875, p. 48.

Upper Medinan (Cataract): Dundas, Ontario.

Tentaculites niagarensis Hall.

Tentaculites niagarense Hall, Pal. New York, 2, 1852, p. 352, pl. 85, figs. 11, 12; ibid., 5, pt. 2, 1879, p. 160.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1177, figs.—Ami, Proc. and Trans. Nova Scotian Inst., 8, 1895, p. 411 (loc. occ.).

Clinton (Rochester): Lockport, etc., New York.

Tentaculites niagarensis cumberlandiæ Hall.

Tentaculites Niagarensis var. Cumberlandiæ Hall, Pal. New York, 7, Sup., 1888, p. 5, pl. 114, figs. 3–6.

Niagaran(?): Cumberland, Maryland.

Tentaculites obliquus Ulrich.

Tentaculites obliquus Ulrich, Amer. Geol., 1, 1888, p. 109.

Trenton (Flanagan): Near Danville, Kentucky.

TENTACULITES ORNATUS Vanuxem. See Tentaculites gyracanthus.

Tentaculites oswegoensis Meek and Worthen.

Tentaculites Oswegoensis Meek and Worthen, Proc. Acad. Nat. Sci., Philadelphia, 1865, p. 254; Geol. Surv. Illinois, 3, 1868, p. 342, pl. 4, fig. 6a.—Hall, Pal. New York, 5, pt. 2, 1879, p. 163.

Richmond (Maquoketa): Oswego, Kendall County, Illinois.

Tentaculites regularis Castelnau. Not recognized.

Tentaculites regularis Castelnau, Essai Syst. Sil. l'Amerique Septent., 1843, p. 34, pl. 10, fig. 6.—Hall, Pal. New York, 5, pt. 2, p. 156.

Trenton(??): New York.

Observation.—Probably the same as T. gyracanthus (Eaton).

TENTACULITES RICHMONDENSIS Miller. See Cornulites richmondensis.

Tentaculites salenzii Salter.
Tentaculites Saienzii Salter, Quart. Jour. Geol. Soc. London, 17, 1861, p. 67, pl
fig. 12.
Silurian: Mount Illampu, Bolivia.

TENTACULITES STERLINGENSIS Meek and Worthen. See Cornulites sterlingensis.

Tentaculites supremus Salter.
Tentaculites supremus Salter, Quart. Jour. Geol. Soc. London, 17, 1861, p. 67,
4, fig. 11.
Silurian: Mount Illampu, Bolivia.

TENTACULITES TENUISTRIATUS Meek and Worthen. See Cornulites tenuistriatus

Tentaculites trombetensis Clarke.
Tentaculites trombetensis Clarke, Archivos Mus. Nac. Rio de Janeiro, 10, aut
Eng. ed., 1900, p. 19, pl. 2, figs. 26, 27.
Silurian: Rio Trombetas, Brazil.

TERATICHNUS Miller. Genotype: T. confertus Mi
Teratichnus Miller, Jour. Cincinnati Soc. Nat. Hist., 2, 1880, p. 221; N. A. (
Pal., 1889, p. 454.

Teratichnus confertus Miller.
Teratichnus confertus Miller, Jour. Cincinnati Soc. Nat. Hist., 2, 1880, p.
pl. 14, fig. 1.
Eden (Economy): Walker Mill Road, Cincinnati, Ohio.

TEREBRATULA ASPER Schlotheim. See Atrypa reticularis aspera.

TEREBRATULA BIDENTATA Hisinger. See Rhynchonella(?) bidentata.

TEREBRATULA BOREALIS Castelnau. See Clitambonites(?) borealis.

TEREBRATULA BREVIROSTRIS Sowerby. See Anastrophia brevirostris.

TEREBRATULA CRISPA Hisinger. See Spirifer (Delthyris) crispus.

TEREBRATULA DECEMPLICATA Sowerby. See Camarotœchia decemplicata.

TEREBRATULA GRAYII Davidson. See Streptis grayi.

TEREBRATULA LYNX Eichwald. See Platystrophia lynx.

TEREBRATULA MARGINALIS Dalman. See Atrypa marginalis.

TEREBRATULA NUCULA Sowerby. See Rhynchonella nucula.

TEREBRATULA PRISCA Castelnau. See Atrypa reticularis.

TEREBRATULA RETICULARIS Hall. See Atrypa reticularis.

TEREBRATULA STRICKLANDI Sowerby. See Uncinulus stricklandi.

TEREBRATULA TURPIS Verneuil. See Clitambonites(?) borealis.

TEREBRATULA WILSONI Sowerby. See Wilsonia wilsoni.

TEREBRATULITES BIFORATUS Schlotheim. See Platystrophia biforata.

TETRACYSTIS Schuchert. Genotype: T. chrysalis Schuch
Tetracystis Schuchert, Smiths. Misc. Coll., 47, pt. 2, 1904, p. 217.

Tetracystis chrysalis Schuchert.

Tetracystis chrysalis Schuchert, Smiths. Misc. Coll., 47, pt. 2, 1904, p. 218, fig. 25, pl. 34, figs. 9, 10; pl. 40, figs. 1-3; Maryland Geol. Surv., Low. Dev., 1913, p. 232, pl. 32, figs. 10, 11.

Helderbergian (Keyser): Keyser, West Virginia.

Holotype.—Cat. No. 35063, U.S.N.M.

Tetracystis fenestratus Schuchert.

Echinoencrinites fenestratus Troost, Amer. Jour. Sci., 8, 1849, p. 419; Proc. Amer. Assoc. Adv. Sci., 2, 1850, p. 60. (Not defined.)

Echinocrinus fenestratus Yandell, Proc. Amer. Assoc. Adv. Sci., 5, 1851, p. 230.

Echinocrinites fenestratus Roemer, Sil. Fauna d. West Tennessee, Breslau, 1860, p. 34.

Tetracystis fenestratus Schuchert, Smiths. Misc. Coll., 47, 1904, p. 219, pl. 34, figs. 6-8.—Wood, Bull. U. S. Nat. Mus., 64, 1909, p. 8.

Niagaran (Brownsport): Decatur County, Tennessee.

Holotype.—Cat. No. 35091, U.S.N.M.

TETRADELLA Ulrich. Genotypes: Beyrichia quadrilirata Hall and Whitfield and Tetradella subquadrans Ulrich.

Tetradella Ulrich, Jour. Cincinnati Soc. Nat. Hist., 13, 1890, pp. 112-114.—Miller, N. A. Geol. Pal., 1st App., 1892, p. 711.—Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 677; Zittel-Eastman Textb. Pal., 1, 1900, p. 644.—Ulrich and Bassler, Proc. U. S. Nat. Mus., 35, 1908, p. 306.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 1041.—Bonnema, Mitt. Min. Geol. Inst. Groningen, 2, 1909, p. 35.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 353—Bassler, Zittel-Eastman Textb. Pal., 2d ed., 1913, p. 738.

TETRADELLA CHAMBERSI Ulrich. See Ceratopsis chambersi.

Tetradella lunatifera (Ulrich).

Strepula lunatifera Ulrich, Geol. Surv. Canada, Cont. Micro-Pal., pt. 2, 1889, p. 56, pl. 9, figs. 14, 14b.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1100, figs.

Tetradella lunatifera Ulrich, Jour. Cincinnati Soc. Nat. Hist., 13, 1890, p. 112; Geol. Minnesota, 3, pt. 2, 1894, p. 680, pl. 46, figs. 12-14, 51a, 51b.—Whiteaves, Geol. Surv. Canada, Pal. Foss., 3, pt. 2, 1895, p. 127.—Ulrich and Bassler, Proc. U. S. Nat. Mus., 35, 1908, pl. 39, fig. 6.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 353, fig. 1658h, i.

Richmond: Stony Mountain, Manitoba; Anticosti; Ohio; Indiana; and Kentucky.

Trenton: Cannon Falls, etc., Minnesota; Iowa; Kentucky; Tennessee; etc.

Plesiotypes.—Cat. No. 41385, U.S.N.M. (Ulrich).

TETRADELLA OCULIFERA Ulrich. See Ceratopsis oculifera.

Tetradella quadrilirata (Hall and Whitfield).

Beyrichia quadrilirata Hall and Whitfield, Geol. Surv. Ohio, Pal., 2, 1875, p. 105, pl. 4, figs. 6, 7.

Beyrichia regularis Miller (not Emmons), Cincinnati Quart. Jour. Sci., 2, 1875, p. 351.

Strepula quadrilirata Ulrich, Geol. Surv. Canada, Cont. Micro-Pal., pt. 2, 1889, p. 54, pl. 9, fig. 12.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1100, figs.

Tetradella quadrilirata Ulrich, Jour. Cincinnati Soc. Nat. Hist., 13, 1890, p. 112; Geol. Minnesota, 3, pt. 2, 1894, p. 679, pl. 46, figs. 1-11.—Ulrich and Bassler, Proc. U. S. Nat. Mus., 35, 1908, pl. 39, figs. 4, 5.—Cumings, 32d Ann. Rep.

Tetradella quadrilirata—Continued.

Dep. Geol. Nat. Res., Indiana, 1908, p. 1048, pl. 53, figs. 4, 4a.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 353, fig. 1658f, g.—Bassler, Zittel-Eastman Textb. Pal., 1913, p. 738, fig. 1425j.

Richmond: Waynesville, Clarksville, etc., Ohio; Indiana; Kentucky; etc.
Black River: Kentucky; Tennessee; Minnesota; etc.
Plesiotypes.—Cat. Nos. 41582, 41583, U.S.N.M.

TETRADELLA QUADRILIRATA var. SIMPLEX. See Tetradella simplex.

Tetradella simplex (Ulrich).

Tetradella quadrilirata var. simplex Ulrich, Geol. Surv. Canada, Cont. Micro-Pal., pt. 2, 1889, p. 55, pl. 9, fig. 13.—Whiteaves, Geol. Surv. Canada, Pal. Foss., 3, pt. 2, 1895, p. 127.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res., Indiana, 1908, p. 1049, pl. 53, figs. 5, 5a.

Tetradella simplex Ulrich and Bassler, Proc. U. S. Nat. Mus., 35, 1908, p. 307.
Richmond: Stony Mountain, Manitoba; Anticosti; Ohio; Indiana; etc.
Plesiotype.—Cat. No. 41584, U.S.N.M.

Tetradella subquadrans Ulrich.

Tetradella subquadrans Ulrich, Jour. Cincinnati Soc. Nat. Hist., 13, 1890, p. 115, figs. 2a–c.—Ulrich and Bassler, Proc. U. S. Nat. Mus., 35, 1908, pl. 39, figs. 1–3.

Trenton: Trenton Falls, New York.
Holotype.—Cat. No. 41384, U.S.N.M.

TETRADIUM Dana. Genotype: T. fibratum Safford.

Tetradium Dana, Wilkes' U. S. Expl. Exped. 1838–42, 7, 1846, p. 701.—Safford, Amer. Jour. Sci. Arts, 2d ser., 22, 1856, pp. 236–237.—Hitchcock, Geol. Vermont, 1, 1861, p. 289.—Safford, Geol. Tennessee, 1869, p. 533.—Nicholson, Geol. Surv. Ohio, Pal., 2, 1875, p. 221; Rep. Prov. Ontario, pt. 2, 1875, p. 27.—Nicholson and Etheridge, Ann. Mag. Nat. Hist., 4th ser., 20, 1877, pp. 161, 165; Mon. Sil. Foss. Girvan Dist., 1878, p. 29.—Nicholson, Tab. Corals Pal. Period, 1879, pp. 23, 231.—Zittel, Handb. Pal., 1, 1880, p. 619.—Roemer, Leth. geog., pt. 1, Leth. Pal., 1883, p. 481.—Miller, N. A. Geol. Pal., 1889, p. 206.—Lambe, Cont. Can. Pal., Geol. Surv. Canada, 4, pt. 1, 1899, p. 92.—James, Jour. Cincinnati Soc. Nat. Hist., 15, pt. 4, 1893, p. 153.—Sardeson, Neues Jahrb. Min., Geol. Pal., Beilage-Band, 10, 1896, p. 345.—Ruedemann, Amer. Geol., 22, 1898, p. 16–25.—Lindstrom, Ofvers. K. Vet.-Akad. Forhandl., 56, No. 2, 1899, p. 44; Kongl. Sven. Vet.-Akad. Handl., 32, No. 1, 1899, p. 29.—Grabau and Shimer, N. A. Index Fossils, 1, 1906, p. 99.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res., Indiana, 1908, p. 700.

Tetradium apertum Safford.

Tetradium apertum Safford, Amer. Jour. Sci. Arts, 2d ser., 22, 1856, p. 238.—Lindstrom, Ofvers. K. Vet.-Akad. Forhandl., 56, No. 2, 1899, p. 44.

Tetradium fibratum var. apertum Safford, Geol. Tennessee, 1869, p. 535.
Middle Ordovician: Central Tennessee.

Observation.—Several distinct species, including T. cellulosum, are included in Safford's description, and until the subject has been revised, T. apertum can not be considered valid.

Tetradium approximatum Ulrich.

Tetradium approximatum Ulrich, Amer. Geol., 1, 1888, p. 183.

Tetradium minus Nicholson (not Safford), Rep. Pal. Province Ontario, pt. 2, 1875, p. 28; Geol. Surv. Ohio, Pal., 2, 1875, p. 222.—Nicholson and Etheridge,

tradium approximatum—Continued.
Ann. Mag. Nat. Hist., 4th ser., 20, 1877, p. 162, figs. a–g; Mon. Sil. Foss. Girvan Dist., 1878, p. 30, fig. 2.—Nicholson, Tab. Corals Pal. Period, 1879, p. 23, fig. 10; p. 232, figs. 33a–c.—James, Jour. Cincinnati Soc. Nat. Hist., 15, pt. 4, 1893, p. 154.—Foerste, Amer. Geol., 31, 1903, p. 343 (loc. occ.), p. 345.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res., Indiana, 1908, p. 709, pl. 2, figs. 1–1c.—Foerste, Bull. Sci. Lab. Denison Univ., 14, 1909, p. 311, pl. 10, figs. 1a–b.
Tetradium Huronense Foord (part), Cont. Micro-Pal., Geol. Surv. Canada, 1883, p. 25, pl. 7, figs. 1b–1e (not 1, 1a).
Tetradium fibratum Billings, Geol. Canada, Geol. Surv. Canada, 1863, p. 139, figs. 71a.—Miller, N. A. Geol. Pal., 1889, p. 206, figs. 224.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 1184, figs.—James, Jour. Cincinnati Soc. Nat. Hist., 15, pt. 4, 1893, p. 153.
Richmond: Ohio; Indiana; Kentucky; Tennessee; Canada; etc.

Tetradium cellulosum (Hall).
Phytopsis cellulosum Hall, Pal. New York, 1, 1847, p. 39, p. 315, pl. 9, figs. 1, 1a–d.
Tetradium cellulosum Dwight, Trans. Vassar Bros. Inst., 5, 1890, p. 76.—Ruedemann, Amer. Geol., 22, 1898, pp. 16–25, pl. 5, figs. 1–16a; Bull. New York State Mus., 49, 1901, p. 10.—Bassler, Bull. Virginia Geol. Surv., 2a, 1909, pl. 23, figs. 15, 16.
Tetradium fibratum Billings (not Safford), Geol. Canada, Geol. Surv. Canada, 1863, p. 139, fig. 71b (not a).—Miller, N. A. Geol. Pal., 1889, p. 206, text fig. 225 (not 224).—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1184, fig.
Black River (Lowville): Watertown, etc., New York; Canada; Pennsylvania to Alabama; Kentucky; etc.

Tetradium columnare (Hall).
Chætets columnaris Hall, Pal. New York, 1, 1847, p. 68, pl. 23, figs. 4, 4a.
Tetradium columnare Safford, Amer. Jour. Sci. Arts, 2d ser., 22, 1856, p. 237.—Hitchcock, Geol. Vermont, 1, 1861, p. 289.—Safford, Geol. Tennessee, 1869, p. 535.—James, Jour. Cincinnati Soc. Nat. Hist., 15, pt. 4, 1893, p. 154.
Trenton: Sugar River, Lewis County, New York; Tennessee; etc.

Tetradium fibratum Safford.
Tetradium fibratum Safford, Amer. Jour. Sci. Arts, 2d ser., 22, 1856, p. 237, fig. 2; Geol. Tennessee, 1869, p. 534, fig. 2.—Lambe (part), Cont. Can. Pal., Geol. Surv. Canada, 4, pt. 1, 1899, p. 93, pl. 2, fig. 5.—Grabau and Shimer (part), N. A. Index Fossils, 1, 1906, p. 99, fig. 160.—Bassler, Bull. Virginia Geol. Surv., 2a, 1909, p. 184, fig. 21.
Trenton and Maysville: Nashville, Columbia, etc., Tennessee; Kentucky; Virginia; etc.

TETRADIUM FIBRATUM of authors. See Tetradium approximatum.

TETRADIUM FIBRATUM var. APERTUM Safford. See Tetradium apertum.

TETRADIUM FIBRATUM MINUS Safford. See Tetradium minus.

Tetradium halysitoides Raymond.
Tetradium halysitoides Raymond, Bull. Victoria Memorial Mus., 1, 1913, p. 49, pl. 6, fig. 3; pl. 7, fig. 1.
Black River (Lowville): Carden, Ontario.

TETRADIUM HURONENSE Foord. See Tetradium approximatum and Stromatocerium huronense.

Tetradium minus Safford.
Tetradium minus Safford, Amer. Jour. Sci. Arts, 2d ser., 22, 1856, p. 238.
Tetradium fibratum var. minus Safford, Geol. Tennessee, 1869, p. 535.
Trenton (Hermitage): Various localities in central Tennessee.

TETRADIUM MINUS of authors. See Tetradium approximatum.

Tetradium ontario Hall. Not recognized.
Tetradium Ontario Hall, 35th Rep. New York State Mus. Nat. Hist., 1884, pl. 16, fig. 9.
Clinton: Shore of Lake Ontario.

TETRADIUM PEACHII Nicholson and Etheridge. See Solenopora compacta.

TETRADIUM PEACHII var. CANADENSE Foord. See Solenopora compacta.

Tetradium racemosum Raymond.
Tetradium racemosum Raymond, Bull. Victoria Memorial Mus., 1, 1913, p. 50, pl. 6, fig. 2.
Trenton: Near Ottawa, Ontario.

Tetradium syringoporoides Ulrich.
Tetradium sp. Bassler, Bull. Virginia Geol. Surv., 2a, 1909, pl. 4, fig. 2.
Tetradium syringoporoides Ulrich, in Stose, Folio U. S. Geol. Surv., 170, 1910, p. 58.
Stones River: Pennsylvania, Maryland, Virginia, etc.

TETRAGONIS Eichwald. See Ischadites Murchison.

TETRAGRAPSUS of authors. See Tetragraptus Salter.

TETRAGRAPSUS BRYONOIDES Salter. See Tetragraptus serra.

TETRAGRAPTUS Salter. Genotype: T. crucialis Salter.
Tetragrapsus Salter, Quart. Jour. Geol. Soc. London, 19, 1863, pp. 136, 140, figs. 8a, b.—Nicholson, Quart. Jour. Geol. Soc. London, 24, 1868, p. 9, 130; Mon. British Grapt., p. 105, fig. 49.
Tetragraptus Hall, 20th Rep. New York State Cab. Hist., 1868, p. 217; rev. ed. (1870), p. 251.—Zittel, Handb. Pal., 1, 1879, p. 298.—Tullberg, Sveriges Geol. Unders., Ser. C, No. 55, 1883, p. 12.—Hermann, Geol. Mag., dec. 3, 3, 1886, p. 18.—Barrois, Ann. Soc. geol. du Nord., 21, Lille, 1893, p. 108.—Nicholson and Marr, Geol. Mag., dec. 4, 2, 1895, pp. 530–537, figs.—Holm, Geol. Mag., dec. 4, 2, 1895, pp. 433–484; Sveriges Geol. Unders., Ser. C, No. 150, 1895, p. 23; Geol. Foren Stockholm Forhandl., 17, 1895, p. 339.—Wiman, Bull. Geol. Inst., Univ. Upsala., 2, pt. 2, 1896, p. 265.—Koken, Die Leitfossilien, Leipzig, 1896, p. 328.—Wiman, Nat. Sci., 9, 1896, p. 191.—Walther, Zeits. d. d. geol. Gesell., 49, 1897, p. 256.—Roemer and Frech, Leth. geog., 1 Theil, Leth. Pal., 1, 3 Lief, 1897, p. 600.—Ruedemann, Amer. Nat., 32, 1898, p. 5; Zittel-Eastman Textb. Pal., 1, 1900, p. 118.—Elles and Wood, Mon. British Grapt., Pal. Soc., 1902, p. 55.—Ruedemann, Mem. New York State Mus., 7, 1904, pp. 642–644.—Grabau and Shimer, N. A. Index Fossils, 1, 1906, p. 29.—Ruedemann, Zittel-Eastman Textb. Pal., 2d ed., 1913, p. 129.
Etagraptus (subgenus of Tetragraptus) Ruedemann, Mem. New York State Mus., 7, pt. 1, 1904, p. 644.

Tetragraptus acanthonotus Gurley.
Tetragrapsus acanthonotus Gurley, Jour. Geol., 4, 1896, p. 65, pl. 4, figs. 1, 1a.
Canadian (Levis): Near Point Levis, Quebec.

Tetragraptus alatus (Hall).

Graptolithus alatus Hall, Canadian Nat. Geol., 3, 1858, p. 162; Geol. Surv. Canada, Rep. Progr. for 1857, 1858, p. 128; Geol. Surv. Canada, dec. 2, 1865, p. 93, pl. 6, fig. 9.

Tetragraptus (Graptolithus) alatus Nicholson, Mon. British Grapt., 1872, p. 67, fig. 37.

Canadian (Levis): Point Levis, Quebec.

Tetragraptus amii (Lapworth).

Graptolithus bryonoides Hall (part), Geol. Surv. Canada, dec. 1, 1865, p. 84, pl. 4, figs. 9, 10.

Tetegraptus amii (Lapworth MS.), Elles and Wood, Mon. British Grapt., pt. 1, Pal. Soc., 1902, p. 60, pl. 5, figs. 4a–c, fig. 36.—Ruedemann, Mem. New York State Mus., 7, pt. 1, 1904, pp. 647–649, pl. 11, figs. 5–7, figs. 53, 54.

Canadian: Point Levis, Quebec (Levis, Diplograptus dentatus zone); Deepkill, Rensselaer County, New York (Deepkill, Tetragraptus zone); Arkansas; South Wales (Skiddaw).

Tetragraptus approximatus (Nicholson).

Tetragrapsus approximatus Nicholson, Ann. Mag. Nat. Hist., 4th ser., 11, 1873, p. 136, fig. 2.

Canadian: Point Levis, Quebec (Levis, Clonograptus zone); Arkansas.

TETRAGRAPTUS BIGSBYI of authors. See Tetragraptus similis, T. woodi, and T. pygmæus.

TETRAGRAPTUS BRYONOIDES Hall. See Didymograptus (Isograptus) caduceus, Tetragraptus serra, and T. similis.

TETRAGRAPTUS CADUCEUS Brögger. See Didymograptus (Isograptus) caduceus and Tetragraptus similis.

Tetragraptus clarkei Ruedemann.

Tetragraptus fruticosus mut. (part) Ruedemann, New York State Pal., Ann. Rep., 1902, p. 566.

Tetragraptus clarkei Ruedemann, Mem. New York State Mus., 7, pt. 1, 1904, pp. 652, 653, pl. 11, figs. 11–16.

Canadian: Deepkill, Rensselaer County, New York (Deepkill, Didymograptus bifidus zone); Arkansas.

Tetragraptus crucifer (Hall).

Graptolithus crucifer Hall, Geol. Surv. Canada, Rep. Progr. for 1857, 1858, p. 125; Canadian Nat. Geol., 3, 1858, p. 149; Geol. Surv. Canada, dec. 2, 1865, p. 92, pl. 5, figs. 10, 13 (?pl. 6, fig. 7).

Graptolithus (Monoprion) crucifer Hall, 20th Rep. New York State Cab. Hist., 1868, p. 226; rev. ed., 1870, p. 260; p. 223.

Tetragrapsus crucifer Nicholson, Quart. Jour. Geol. Soc. London, 24, 1868, p. 144.

Tetragraptus crucifer Elles, Quart. Jour. Geol. Soc. London, 54, 1898, p. 488, fig. 12.—Elles and Wood, Mon. British Grapt., Pal. Soc., 1902, p. 58, pl. 5, fig. 2.

Canadian (Levis): Point Levis, Quebec; Skiddaw slate of England.

Tetragraptus denticulatus (Hall).

Graptolithus denticulatus Hall, Geol. Surv. Canada, Rep. Progress for 1857, 1858, p. 132; Canadian Nat. Geol., 3, 1858, p. 166; Geol. Surv. Canada, dec. 2, 1865, p. 88, pl. 4, figs. 12–16.

Graptolithus (Monoprion) denticulatus Hall, 20th Rep. New York State Cab. Hist., 1868, p. 226; rev. ed., 1870, p. 260.

Tetragraptus denticulatus—Continued.

Tetragrapsus denticulatus Gurley, Jour. Geol., 4, 1896, p. 101 (gen. ref.).

Canadian (Levis, Didymograptus zone): Point Levis, Quebec; Newfoundland (Quebec—P).

Tetragraptus fruticosus (Hall).

Graptolithus fruticosus Hall, Geol. Surv. Canada, Rep. for 1857, 1857, p. 128; Canadian Nat. Geol., 3, 1858, p. 162.—Billings, Geol. Surv. Canada, Pal. Foss., 1, 1865, pp. 366, 375.—Hall, Canadian Org. Rem., dec. 2, 1865, p. 90, pl. 5, figs. 6–8; pl. 6, figs. 1–3; 20th Ann. Rep. New York State Cab. Nat. Hist., 1867, pl. 3, fig. 15; rev. ed., p. 260, pl. 3, fig. 15, pl. 4, fig. 10, p. 223.

Didymograptus? fruticosus Etheridge, jr., Ann. Mag. Nat. Hist., 4th ser., 14, 1874, 6, pl. 3, fig. 19.

Graptolites (Didymograpsus) fruticosus McCoy, Jour. Geol. Surv. Victoria, Prodr. Pal. Victoria, dec. 1, 1874, p. 13, pl. 1, figs. 9–14.

Tetragraptus (Bryograptus) fruticosus Brögger, Die sil. Etagen 2 and 3, etc., 1882, p. 39, Kristiania.

Tetragraptus fruticosus Lapworth, Ann. and Mag. Nat. Hist., ser. 5, 6, 1880, p. 20.—Tullberg, Sver. Geol. Und. Afh. och upps. ser. C, no. 50, 1882, p. 22.—Lapworth, Roy. Soc. Canada, Proc. and Trans., 1886, p. 168.—Roemer and Frech, Leth. Pal., 1, 1897, p. 602.—Ruedemann, Bull. New York State Mus., 52, 1902, pp. 554, 556, 566; p. 588, fig. 15.—Elles and Wood, Mon. British Grapt., pt. 1, Pal. Soc., 1902, p. 61, pl. 6, figs. 2a, b.—Ruedemann, Mem. New York State Mus., 7, pt. 1, 1904, pp. 649–652, pl. 9, figs. 11–14; pl. 10, figs. 1–10.

Tetragrapsus fruticosus Ami, Geol. Surv. Canada, Rep., 2d ser., 3, pt. 2, 1889, p. 116k.

Canadian: Island of Orleans and Point Levis, Quebec (Levis, Didymograptus zone); Deepkill, Rennsselaer County, New York (Deepkill, Tetragraptus zone); Arkansas; Newfoundland; Great Britain; Scania; Australia.

TETRAGRAPTUS FRUTICOSUS (part) Ruedemann. See Tetragraptus clarkei.

Tetragraptus headi (Hall).

Graptolithus Headi Hall, Canadian Nat. Geol., 3, 1858, p. 161; Geol. Surv. Canada, Rep. Progr. for 1857, 1858, p. 127.—Billings, Geol. Canada, Geol. Surv. Canada, 1863, p. 228, fig. 236.—Hall, Geol. Surv. Canada, dec. 2, 1865, p. 8, fig. 3; p. 94, pl. 6, fig. 8 (?pl. 5, figs. 11, 12).

Graptolithus (Loganograptus) headi Hall, 20th Rep. New York State Cab. Hist., 1868, p. 174, fig. 4; p. 226; rev. ed., 1870, p. 207, fig. 4.

Tetragraptus Headi Nicholson, Quart. Jour. Geol. Soc. London, 64, 1868, p. 131.—Roemer and Frech, Leth. geog., 1 Theil, Leth. Pal., 1, 3 Lief, 1897, p. 602, fig. 167.—Elles, Quart. Jour. Geol. Soc. London, 54, 1898, p. 486, fig. 11.—Elles and Wood, Mon. British Grapt. Pal. Soc., 1902, p. 59, fig. 35a, b; pl. 5, figs. 3a, b.

Tetragrapsus Headi Nicholson, Mon. British Grapt., 1872, p. 66, fig. 36.

Tetragraptus cf. Headi Hoek, Neues Jahrb. Min. Geol. Pal., 34, 1912, p. 226, pl. 12, fig. 6.

Canadian (Levis, Diplograptus dentatus zone): Point Levis, Quebec; Newfoundland; Skiddaw slate of Great Britain; Bolivia.

Tetragraptus (Etagraptus) lentus Ruedemann.

Tetragraptus (Etagraptus) lentus Ruedemann, Mem. New York State Mus., 7, pt. 1, 1904, p. 666, pl. 9, figs. 7–10.

Canadian (Deepkill, Didymograptus bifidus zone): Deepkill, Rensselaer County, New York.

Tetragraptus pendens Elles.

Tetragraptus pendens Elles, Quart. Jour. Geol. Soc. London, 54, 1898, p. 491, fig. 13.—Ruedemann, New York State Pal. Ann. Rep., 1902, p. 566.—Elles and Wood, Mon. British Grapt. Pal. Soc., 1902, p. 63, pl. 6, figs. 2a, b.—Ruedemann, Mem. New York State Mus., 7, pt. 1, 1904, pp. 653–655, pl. 11, figs. 17–20, fig. 55.

Lower Ordovician: England (Skiddaw); Deepkill, Rensselaer County, New York (Deepkill, Didymograptus bifidus zone); Point Levis, Quebec (Levis, D. bifidus zone); Arkansas.

Tetragraptus pygmæus Ruedemann.

Tetragraptus bigsbyi Ruedemann (part), New York State Pal. Ann. Rep., 1902, p. 590, fig. 18.

Tetragraptus pygmæus Ruedemann, Mem. New York State Mus., 7, pt. 1, 1904, pp. 664, 665, pl. 12, figs. 11–14.

Canadian (Deepkill, Tetragraptus, Didymograptus, and Diplograptus zones): Deepkill, Rensselaer County, and Mount Moreno, near Hudson, New York.

Tetragraptus quadribrachiatus (Hall).

Graptolithus quadribrachiatus Hall, Geol. Surv. Canada, Rep. for 1857, 1858, p. 125; Canadian Nat. Geol., 3, 1858, p. 149; Geol. Surv. Canada, Can. Org. Rem., dec. 2, 1865, p. 91, pl. 5, figs. 1–5; pl. 6, figs. 5, 6.

Graptolites (Didymograpsus) quadribrachiatus McCoy, Jour. Geol. Surv. Victoria, Prodr. Pal. Victoria, dec. 1, 1874, p. 15, pl. 2, fig. 1.

Tetragrapsus crucialis Salter, Quart. Jour. Geol. Soc., 19, 1863, p. 137, fig. 8b.

Tetragrapsus quadribrachiatus Nicholson, Quart. Jour. Geol. Soc. London, 24, 1868, p. 131.—Hopkinson, ibid., 31, 1875, p. 649, pl. 33, figs. 9a, b.

Tetragraptus quadribrachiatus Linnarsson, Sver. Geol. Und. Afh. och upps., ser. C, No. 31, 1879, p. 5.—Brögger, Die sil. Etagen 2 and 3, 1882, p. 38, Kristiania.—Törnquist, Sver. Geol. Und. Afh. och upps., ser. C, No. 57, 1883, p. 16.—Herrmann, Quart. Jour. Geol. Soc., ser. 3, 3, 1886, p. 18.—Barrois, Ann. de la Soc. Géol. du Nord, 20, 1892, p. 95.—Matthew, Trans. and Proc. Roy. Soc. Canada, 11, p. 114, 10, sec. 4, 1893, p. 98.—Roemer and Frech, Leth. Pal., 1, 1897, p. 603.—Elles, Quart. Jour. Geol. Soc. London, 54, 1898, p. 485.—Ruedemann, Ann. Rep. New York State Pal., 1902, p. 556.—Elles and Wood, Mon. British Grapt., pt. 1, 1902, p. 57, pl. 5, figs. 1a–d, fig. 34.—Ruedemann, Mem. New York State Mus., 7, pt. 1, 1904, pp. 645–647, pl. 11, figs. 1–4, figs. 51, 52.—Grabau and Shimer, N. A. Index Fossils, 1, 1906, p. 29, fig. 41.

Canadian: Point Levis, Quebec (Levis, Clonograptus, Didymograptus, and Diplograptus dentatus zones); Deepkill, Rensselaer County, and Mount Morena, New York (Deepkill, Tetragraptus, and D. dentatus zones); St. Johns, New Brunswick; Great Britain (Skiddaw); Scandinavia; France; Australia.

TETRAGRAPTUS QUADRIBRACHIATUS Etheridge. See Tetragraptus serra.

Tetragraptus serra (Brongniart).

Fucoides serra Brongniart, Hist. Veget. Foss., 1, 1828, p. 71, pl. 6, fig. 7, 8.

Tetragraptus serra Hopkinson and Lapworth, Ann. Mag. Nat. Hist., 4th ser., 31, 1875, p. 650, pl. 33, fig. 10.—Törnquist, Sver. Geol. Und. Afh. och upps., ser. C, No. 57, 1883, p. 16.—Herrmann, Geol. Mag., 3d ser., 3, 1886, p. 19.—Ami, Geol. Surv. Canada, Rep., 2d ser., 3, pt. 2, 1889, p. 116k.—Barrois, Ann. Soc. Geol, du Nord, 20, 1892, p. 94.—Elles, Quart. Jour. Geol. Soc. London, 54, 1898, p. 490.—Ruedemann, New York State Pal., Ann. Rep. 1902, pp. 554, 556, 566.—Elles, Wood, and Lapworth, Mon. British Grapt., pt. 1, Pal. Soc., 1902, p. 65, pl. 6, figs. 4a–f.—Ruedemann, Mem. New York State Mus., 7, pt. 1, 1904, pp. 655–657, pl. 11, figs. 8–10, figs. 56, 57.

Tetragraptus serra—Continued.

Graptolithus bryonoides Hall, Geol. Surv. Canada, Rep., 1858, p. 126; Canadian Nat. and Geol., 3, 1858, p. 150; Geol. Surv. Canada, Can. Org. Rem., dec. 2, 1865, p. 84, pl. 4, figs. 1-8, 11.—Billings, Geol. Surv. Canada, Pal. Foss., 1, 1865, p. 366, 375.

Graptolites (Didymograpsus) bryonoides McCoy, Geol. Surv. Victoria, Prodr. de Pal. Victoria, dec. 1, 1874, p. 15, pl. 2, figs. 2, 3, 5.

Tetragrapsus bryonoides Nicholson, Quart. Jour. Geol. Soc. London, 24, 1868, p. 131.—Salter, ibid., 19, 1863, p. 137, fig. 8a.

Tetragraptus bryonoides Etheridge, jr. (part), Ann. Mag. Nat. Hist., 4th ser., 14, 1874, p. 2, pl. 3, fig. 1.—Linnarsson, Sver. Geol. Und. Afh. och upps., ser. C, No. 31, 1879, p. 5.—Brogger, Die sil. Etagen 2 and 3, 1882, p. 38.—Tullberg, Skanes Grap. in Sver. Geol. Und. Afh. och upps., ser. C, No. 50, 1882, p. 22.—Roemer and Frech, Leth. pal., 1, 1897, p. 601.

Didymograpsus caduceus Salter (part), Quart. Jour. Geol. Soc. London, 9, 1853, p. 87, fig. 1a.

Tetragraptus quadribrachiatus Etheridge, Ann. Mag. Nat. Hist., 4th ser., 14, 1874, p. 3, pl. 3, figs. 5-8.

Canadian: Point Levis, Quebec (Levis, Clonograptus, Didymograptus, and Diplograptus dentatus zones); Newfoundland; Deepkill, Rensselaer County, New York (Deepkill, Tetragraptus zone); Arkansas; Sweden; France; Australia; Great Britain (Skiddaw).

Tetragraptus similis (Hall).

Phyllograptus similis Hall, Geol. Surv. Canada, Rep. for 1858, p. 140; Canadian Nat. and Geol., 3, 1858, p. 173.—Moberg, Geol. Foren. Stockholm Forhandl., 13, 1891, p. 219.

Tetragraptus similis Ruedemann, Mem. New York State Mus., 7, pt. 1, 1904, pp. 658-662, pl. 12, figs. 2-10; figs. 58-61; p. 642, fig. 48; p. 644, figs. 49, 50.

Didymograpsus caduceus Salter, Quart. Jour. Geol. Soc. London, 19, 1863, p. 137, fig. 13b(?).

Didymograptus caduceus Nicholson, Quart. Jour. Geol. Soc. London, 24, 1868, p. 138.

Tetragraptus caduceus Brogger, Die sil. Etagen 2, 3, 1882, p. 38.—Perner, Etudes sur les Grapt. de Boheme, pt. 2, 1894, p. 20, pl. 6, figs. 9-12.

Graptolithus bigsbyi Hall, Geol. Surv. Canada, Can. Org. Rem., dec. 2, 1865, p. 86, pl. 16, figs. 22-30.

Graptolithus (Monoprion) bigsbyi Hall, 20th Rep. New York State Cab. Hist., 1868, p. 226, pl. 3, figs. 18-21; rev. ed., 1870, p. 260, pl. 3, figs. 18-21; p. 223.

Tetragraptus bigsbyi Linnarsson, Sver. Geol. Und. Afh. och upps., Ser. C, No. 31, 1879, p. 5.—Tullberg, ibid., No. 50, 1882, p. 22.—Ami, Geol. Surv. Canada, Rep., 2d Ser., 3, pt. 2, 1889, p. 116k.—Moberg, Geol. Foren. Stockholm Forhandl., 13, 1891, p. 219.—Holm, Sver. Geol. Und. Afh. och upps., Ser. C, No. 150, 1895, p. 24, pl. 1, figs. 9-16; pl. 2, figs. 1-3; pl. 3, figs. 13-16; p. 25, figs. 1-7; Geol. Mag., dec. 4, 2, 1895, p. 484, pl. 13, figs. 9-16; pl. 14, figs. 13-16; p. 485, figs. 1-3.—Roemer and Frech, Leth. Geog., 1 Theil, Leth. Pal., 1, 1897, pp. 600, 601, fig. 166, pl. A, figs. 4-6b.—Elles, Quart. Jour. Geol. Soc. London, 54, 1898, p. 488.—Ruedemann, Bull. New York State Mus., 52, 1902, pp. 556, 566; p. 590, fig. 18.—Elles and Wood, Mon. British Grapt., pt. 1, Pal. Soc., 1902, p. 68, pl. 6, figs. 6a-e, fig. 42a.—Grabau and Shimer, N A. Index Fossils, 1, 1906, p. 29, fig. 43.

Tetragraptus bryonoides Etheridge, jr., Ann. Mag. Nat. Hist., 4th ser., 14, 1874, p. 2, pl. 3, figs. 1, 2 (not figs. 3, 4).

Tetragraptus similis—Continued.

Canadian: Point Levis, Quebec (Levis, Didymograptus and Diplograptus dentatus zones); Deepkill, Rensselaer County, New York (Deepkill, Tetragraptus and Didymograptus zones); Great Britain (Skiddaw); Sweden; Bohemia; Australia.

Tetragraptus taraxacum Ruedemann.

Tetragraptus taraxacum Ruedemann, Bull. New York State Mus., 52, 1902, p. 589, fig. 16; Mem. New York State Mus., 7, pt. 1, 1904, pp. 663, 664, pl. 12, figs. 17–26.

Canadian (Deepkill, Tetragraptus and Diplograptus dentatus zones): Deepkill, Rensselaer County, and Mount Moreno, near Hudson, New York.

Tetragraptus woodæ Ruedemann.

Tetragraptus bigsbyi Ruedemann (part), New York State Pal., Ann. Rep., 1902, p. 556.

Tetragraptus woodi Ruedemann, Mem. New York State Mus., 7, pt. 1, 1904, pp. 662, 663, pl. 12, figs. 1, 15, 16. (Changed to woodæ in Mem. 11, pt. 2, 1908, p. 136.)

Canadian (Deepkill, Tetragraptus zone): Deepkill, Rensselaer County, New York.

TETRANOTA Ulrich and Scofield. Genotype: Bucania bidorsata Hall.

Bucania (part) Hall, Pal. New York, 1, 1847, p. 186.

Bellerophon (part) Whitfield, Geol. Wisconsin, 4, 1874, p. 223.

Bucanella (part) Koken, Neues Jahrb. Min., Geol., Pal., Beilageband 6, 1889, p. 389.

Tetranota Ulrich and Schofield, Geol. Minnesota, 3, pt. 2, 1897, pp. 849–875.—Koken, Neues Jahrb. Min., Geol., Pal., 1, 1898, p. 5.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 612.—Dall, Zittel-Eastman Textb., Pal., 2d ed., 1913, p. 522.

Tetranota bidorsata (Hall).

Bucania bidorsata Hall, Pal. New York, 1, 1847, p. 186, pl. 40, figs. 8a–g; Rep. Geol. Surv. Wisconsin, 1862, p. 39, fig. 6.—Chamberlin, Geol. Wisconsin, 1, 1883, p. 158, fig.—Walcott, Mon. U. S. Geol. Surv., 8, 1884, pl. 1, figs. 13, 13a–c.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 96, figs.—Whiteaves, Canadian Rec. Sci., 5, 1893, p. 322 (loc. occ.).—Raymond, Ann. Carnegie Mus., 3, pt. 4, 1906, p. 514.

Bellerophon bidorsatus D'Orbigny, Prodr. de. Pal., 1, 1849, p. 8 (gen. ref.).—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 165, pl. 6, figs. 8, 9, 27.

Tetranota bidorsata Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 877, pl. 65, figs. 10–18.—Whiteaves, Pal. Foss. Geol. Surv. Canada, 3, pt. 2, 1897, p. 188.—Weller, Geol. Surv. New Jersey, Pal., 3, 1903, p. 176, pl. 12, figs. 18, 19.—Raymond, Ann. Carnegie Mus., 4, 1908, p. 197, pl. L, fig. 5.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 612, figs. 819a–d.

Trenton: Middleville, Watertown, etc., New York; Canada; Minnesota; Kentucky; Tennessee; etc.

Black River: Minnesota, etc.; Upper Pogonip, Eureka District, Nevada.

Stones River (Murfreesboro): Murfreesboro, Tennessee.

Plesiotypes.—Cat. Nos. 17301, 46011, U.S.N.M. (Walcott and Ulrich and Scofield).

Tetranota bidorsata minor Ulrich and Scofield.

Tetranota bidorsata var. minor, Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 878.

Black River (Decorah): Minneapolis, Cannon Falls, and near Fountain, Minnesota.

Cotypes.—Cat. No. 46012, U.S.N.M.

Tetranota macra Ulrich and Scofield.

Tetranota macra Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 879, pl. 65, figs. 1, 2.

Black River (Platteville): Minneapolis, Minnesota.

Holotype.—Cat. No. 46013, U.S.N.M.

Tetranota obsoleta Ulrich and Scofield.

Tetranota obsoleta Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 880, pl. 65, figs. 19–23.—Schuchert, Proc. U. S. Nat. Mus., 22, 1900, p. 164.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 613, fig. 819i–k.—Foerste, Jour. Cincinnati Soc. Nat. Hist., 21, 1914, p. 140.

Bucania obsoleta Miller, N. A. Geol. Pal., 1897, p. 766 (gen. ref.).

Black River: Minneapolis and St. Paul, Minnesota; Janesville, Wisconsin (Platteville); Chatfield and Cannon Falls, Minnesota (Decorah); Mercer County, Kentucky.

Trenton: Goodhue County, Minnesota; Kentucky; Baffin Land.

Eden: Cincinnati, Ohio, and vicinity.

Cotypes.—Cat. Nos. 46014, 46015, U.S.N.M.

Tetranota sexcarinata Ulrich and Scofield.

Tetranota sexcarinata Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 878, pl. 65, figs. 3–9.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 613, fig. 819e–h–l.

Black River (Platteville): Minneapolis, Cannon Falls, etc., Minnesota; Beloit and Janesville, Wisconsin; Dixon, Illinois.

Stones River (Lebanon): Lebanon and Lavergne, Tennessee.

Trenton (Prosser): Fillmore County, Minnesota.

Cotypes.—Cat. Nos. 46016–46018, U.S.N.M.

Tetranota wisconsinensis (Whitfield).

Bellerophon wisconsinensis Whitfield, Ann. Rep. Geol. Surv. Wisconsin, 1878, p. 76; Geol. Surv. Wisconsin, 4, 1882, p. 223, pl. 6, figs. 15, 16.

Tetranota wisconsinensis Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 881, pl. 65, figs. 26–29.

Black River (Platteville): Beloit and Janesville, Wisconsin; Minneapolis and St. Paul, Minnesota.

Plesiotype.—Cat. No. 46019, U.S.N.M.

THALAMOCRINUS Miller and Gurley. Genotype: T. ovatus Miller and Gurley.

Thalamocrinus Miller and Gurley, Bull. Illinois State Mus. Nat. Hist., 7, 1895, p. 81.—Miller, N. A. Geol. Pal., 2d App., 1897, p. 754.—Bather, Treatise on Zool. (Lankester), pt. 3, 1900, p. 204.

Thalamocrinus cylindricus Miller and Gurley.

Thalamocrinus cylindricus Miller and Gurley, Bull. Illinois State Mus. Nat. Hist., 7, 1895, p. 82, pl. 5, figs. 32, 33.—Miller, N. A. Geol. Pal., 2d App., 1897, p. 754, fig. 1401.

Niagaran (Brownsport): Decatur County, Tennessee.

Thalamocrinus ovatus Miller and Gurley.

Thalamocrinus ovatus Miller and Gurley, Bull. Illinois State Mus. Nat. Hist., 7, 1895, p. 82, pl. 5, figs. 29–31.—Miller, N. A. Geol. Pal., 2d App., 1897, p. 754, fig. 1402.

Niagaran (Brownsport): Decatur County, Tennessee.

THALEOPS Conrad. Genotype: T. ovatus Conrad.

Thaleops Conrad, Proc. Acad. Nat. Sci. Philadelphia, 1, 1843, pp. 331–2.—Hall, Pal. New York, 1, 1847, p. 259.—Clarke, Geol. Minnesota, 3, pt. 2, 1897, p. 716.—Raymond and Narraway, Ann. Carnegie Mus., 4, 1908, p. 247.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 298.—Slocom, Field Mus. Nat. Hist., Geol. Ser., 4, 1913, p. 56.—Raymond, Zittel-Eastman Textb. Pal., 1913, p. 720.

Thaleops arcturus (Hall).

Illænus arcturus Hall, Pal. New York, 1, 1847, p. 23, pl. 4 (bis), fig. 12.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 235, pl. 3, fig. 12.—Billings, Canadian Nat. Geol., 4, 1859, p. 379.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 299, figs.

Thaleops arctura Clarke, Geol. Minnesota, 3, pt. 2, 1897, p. 718.—Raymond and Narraway, Ann. Carnegie Mus., 4, 1908, p. 248, pl. 61, fig. 8.—Raymond, Ann. Carnegie Mus., 7, 1910, p. 71; 7th Rep. Vermont State Geol., 1910, p. 227, pl. 35, fig. 5.—Grabau and Shimer, N. A. Index Fossils, 1910, p. 298, fig. 1605b.

Thaleops ovatus Raymond, Bull. Amer. Pal., 3, 1902, pl. 18, fig. 9; Ann. Carnegie Mus., 3, 1905, p. 352, pl. 13, fig. 5.

Chazyan (Day Point—Valcour): Chazy, Crown Point, Valcour, etc., New York; Isle La Motte, Vermont.

Thaleops clavifrons (Billings).

Illænus clavifrons Billings, Canadian Nat. Geol., 4, 1859, p. 379.

Chazyan (Mingan): Mingan Islands, Canada.

Thaleops ovatus Conrad.

Thaleops ovata Conrad, Proc. Acad. Nat. Sci., Philadelphia, 1, 1843, p. 332.—Clarke, Geol. Minnesota, 3, pt. 2, 1897, p. 716, fig. 25–28.—Ruedemann, Bull. New York State Mus., 49, 1901, p. 62.—Raymond and Narraway, Ann. Carnegie Mus., 4, 1908, p. 247, pl. 60, figs. 11–13; pl. 61, figs. 6, 7.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 298.—Slocom, Field Mus. Nat. Hist., Geol. Ser., 4, 1913, p. 56, pl. 14, figs. 6–8.

Thaleops (Illænus) ovatus Hall, Pal. New York, 1, 1847, p. 259, pl. 67, figs. 6a, b; p. 318, pl. 67, fig. 6c.

Illænus ovatus Hall, 12th Rep. New York State Cab. Nat. Hist., 1859, p. 76 (gen. ref.).—Billings, Canadian Nat. Geol., 4, 1859, p. 376 (loc. occ.).—Whitfield, Geol. Wisconsin, 4, 1882, p. 238, pl. 5, figs. 1, 2.—Chamberlin, Geol. Wisconsin, 1, 1883, p. 160, fig.

Illænus herricki Foerste, 15th Ann. Rep. Geol. Nat. Hist. Surv. Minnesota, 1887, p. 479, fig. 2.

Black River: Mineral Point, Beloit, Wisconsin; Dixon, Illinois; Minneapolis, Minnesota (Platteville); Ottawa, Ontario.

?Richmond (Maquoketa): Clermont, Iowa.

THALEOPS OVATUS Raymond. See Thaleops arcturus.

Thaleops? pterocephalus (Whitfield).

Illænus pterocephalus Whitfield, Ann. Rep. Geol. Surv., 1878, p. 87; Geol. Wisconsin, 4, 1882, p. 309, pl. 20, figs. 10–12.

Niagaran (Racine): Pewaukee, Wisconsin.

Thaleops vindex (Billings).

Illænus vindex Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 179, figs. 160a, b.—Raymond, Ann. Carnegie Mus., 3, 1905, p. 353, fig. 2.

Chazyan (Mingan): Mingan Islands, Canada.

THAMNISCUS King. Genotype: Ceratophytes dubius Schlotheim.

Thamniscus King, Ann. Mag. Nat. Hist., 2d ser., 2, 1849, p. 389; Perm. Foss. England, 1850, p. 44.—Pictet, Traite de Pal., 2d ed., 4, 1857, p. 168.—Eichwald, Leth. Rossica, 1, 1860, p. 386.—Vine, Proc. Geol. Assoc., 4, 1875, p. 120; Geol. Mag., dec. 2, 7, 1880, p. 507; Rep. 50th Meeting British Assoc. Adv. Sci., 1880, p. 81.—Shrubsole, Quart. Jour. Geol. Soc. London, 38, 1882, p. 343.—Vine, Proc. Yorkshire Geol. and Polyt. Soc., n. s., 8, 1884, p. 170; Rep. 53d Meeting British Assoc. Adv. Sci., 1884, p. 195; Proc. Yorkshire Polyt. Soc., 9, 1885, p. 89.—Waagen and Pichl, Pal. Indica, 13th ser., 1885, p. 807.—Ulrich, Contr. Amer. Pal., 1, 1886, p. 5.—Hall and Simpson, Pal. New York, 6, 1887, p. 22.—Miller, N. A. Geol. Pal., 1889, p. 327.—Ulrich, Geol. Surv. Illinois, 7, 1890, pp. 397, 606; Zittel's Textb. Pal. (Eng. ed.), 1896, p. 283.—Simpson, 14th Ann. Rep. State Geol. New York, for 1894, 1897, p. 524.—Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 40.—Condra, Nebraska Geol. Surv., 2, pt. 1, 1903, p. 82.—Cumings, Amer. Jour. Sci., 17, 1904, p. 73.—Hennig, Archiv. fur Zool., Sven. Vet. Akad. Stockholm, 3, No. 10, 1906, p. 15.—Bassler, Bull. U. S. Geol. Surv., 292, 1906, p. 53; Zittel-Eastman Textb. Pal., 1913, p. 341.

Thamniscus dichotomus (Hall).

Hornera? dichotoma Hall, Pal. New York, 2, 1852, p. 163, pl. 40C, fig. 3d (not figs. 3a, b).

Subretepora dichotoma Miller, N. A. Geol. Pal., 1889, p. 326.

Stictopora dichotoma Whitfield and Hovey, Bull. Amer. Mus. Nat. Hist., 11, pt. 2, 1899, p. 108.

Thamniscus dichotomus Ulrich, Geol. Surv. Illinois, 8, 1890, p. 607.—Bassler, Bull. U. S. Geol. Surv., 292, 1906, p. 54, pl. 18, figs. 17–19; pl. 27, figs. 1–7.

Clinton (Rochester): Lockport, Rochester, etc., New York; Grimsby and Hamilton, Ontario.

Plesiotypes.—Cat. Nos. 35558, 35751, U.S.N.M.

THAMNISCUS NIAGARENSIS Hall. See Pseudohornera niagarensis.

Thamniscus regularis Ulrich and Bassler.

Thamniscus regularis Ulrich and Bassler, Maryland Geol. Surv., Low. Dev., 1913, p. 286, pl. 47, figs. 4–6.

Helderbergian (Keyser): Devils Backbone, near Cumberland, Maryland.

Cotypes.—Cat. No. 60741, U.S.N.M.

Thamniscus striatopora (Billings).

Helopora striatopora Billings, Cat. Sil. Foss. Anticosti, 1866, p. 39.

Nematopora striatopora Ulrich, Geol. Surv. Illinois, 8, 1890, p. 645; Amer. Geol., 1, 1888, p. 232, footnote.

Anticostian (Jupiter River): Southwest Point, Anticosti.

THAMNOCELLA Simpson. See Pseudohornera Roemer.

THAMNOGRAPTUS Hall. Genotype: T. typus Hall=T. capillaris Hall.

Thamnograptus Hall, Pal. New York, 3, 1859, p. 519; 13th Rep. New York State Cab. Nat. Hist., 1860, p. 62; Geol. Surv. Canada, dec. 2, 1865, p. 141; 20th Rep. New York State Cab. Hist., 1868, p. 218; rev. ed., p. 252.—Nicholson, Ann. Mag. Nat. Hist., 4th ser., 16, 1875, p. 270.—Zittel, Handb. Pal., 1, 1879, p. 290.—Spencer, Bull. Mus. Univ. State Missouri, 1, 1884, p. 39; Trans. Acad. Sci. St. Louis, 4, 1884, p. 563, 589.—Miller, N. A. Geol. Pal., 1889, p. 207.—Pocta, Syst. Sil. Centre Boheme, 8, pt. 1, 1894, p. 165.—Elles and Wood, Mon. British Grapt., Pal. Soc., 1903, p. 41.—Ruedemann, Mem. New York State Mus., 11, pt. 2, 1908, p. 204.

Thamnograpsus Nicholson, Mon. British Grapt., 1872, p. 130.

nnograptus affinis Whiteaves.
hamnograptus affinis Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 3, 1897, p. 148, fig. 10.
lack River or Richmond: Cat Head, Lake Winnipeg, Canada.

nnograptus anna Hall.
hamnograptus anna Hall, Geol. Surv. Canada, dec. 2, 1865, p. 141, pl. 21, fig. 9.
anadian (Levis, Didymograptus zone): Three miles above mouth River St. Anne, Canada.
Observation.—See Goniograptus geometricus Ruedemann.

NOGRAPTUS BARRANDII Lapworth. See Thamnograptus capillaris.

nnograptus bartonensis Spencer.
hamnograpsus bartonensis Spencer, Canadian Nat., 8, 1878, pp. 458, 462.
hamnograptus bartonensis Spencer, Trans. Acad. Sci. St. Louis, 4, 1884, pp. 565, 589, 590, pl. 6, figs. 4, 5; Bull. Mus. Univ. State Missouri, 1, 1884, pp. 15, 39, 40, pl. 6, figs. 4, 5.—Gurley, Jour. Geol., 4, 1896, pp. 101, 309.—Bassler, Bull. U. S. Nat. Mus., 65, 1909, pp. 62–64, figs. 87–89.
iagaran dolomite: Hamilton, Ontario.

nnograptus capillaris (Emmons).
emagrapsus capillaris Emmons, Amer. Geology, 1, pt. 2, 1855, p. 109, pl. 1, fig. 6.
emagraptus capillaris Lapworth, Quart. Jour. Geol. Soc. London, 31, 1875, p. 653, pl. 34, figs. 2a, b.—Hall, Pal. New York, 3, 1859, p. 520, fig. 3.
hamnograptus capillaris Hall, Pal. New York, 3, 1859, p. 520, fig. 3; 20th Rep. New York State Cab. Nat. Hist., 1868, p. 225.—Walcott, Albany, Inst. Trans., 10, 1883, p. 35 (adv. sheets, 1879); Bull. Geol. Soc. Amer., 1, 1890, p. 338.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1185, fig.—Ruedemann, Mem. New York State Mus., 11, pt. 2, 1908, pp. 206–210, pl. 10, figs. 4–8; pl. 12, figs. 9–16; figs. 108–112.
hamnograptus typus Hall, Pal. New York, 3, 1859, pp. 519, 520, figs. 1, 2; 13th Rep. New York State Cab. Nat. Hist., 1860, p. 62, figs, 1, 2; Geol. Surv. Canada, dec. 2, 1856, p. 17, fig. 24; 20th Rep. New York State Cab. Nat. Hist., 1868, p. 184, fig. 26; rev. ed., p. 214, fig. 26; p. 225.—Nicholson, Mon. British Grapt., 1872, p. 131, fig. 71.—Lapworth, Cat. West Scot. Foss., 1876, p. 7, pl. 4, figs. 95, 96.—Miller, N. A. Geol. Pal., 1889, p. 207, fig. 226.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1185, fig.—Lapworth, Belfast Nat. Field Club Rep. Proc., 1, App., 1877, p. 143, pl. 7, fig.16.
astrites barrandi Hall, Pal. New York, 3, 1859, pp. 521, 522, figs. 1, 2; 13th Rep. New York State Cab. Nat. Hist., 1860, p. 64, figs. 1, 2; 20th Rep. New York State Cab. Nat. Hist., 1868, p. 184, fig. 25; p. 194, fig. 30; rev. ed., p. 214, fig. 25; p. 225.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 852, figs.
hamnograptus barrandii Lapworth, Roy. Soc. Canada Trans., sec. 4, 1886, p. 178.
hazyan: Kenwood, Stockport, etc., New York (Normanskill); Virginia and Tennessee (Athens); Arkansas (Stringtown); Great Britain; Australia.
lesiotype.—Cat. No. 54252, U.S.N.M.

nnograptus(?) multiformis Spencer.
hamnograptus(?) multiformis Spencer, Canadian Nat., 10, 1882, p. 165; Trans. Acad. Sci. St. Louis, 4, 1884, pp. 565, 590, pl. 6, figs. 2, 3; Bull. Mus. Univ. State Missouri, 1, 1884, pp. 15, 40, pl. 6, figs. 2, 3.—Gurley, Jour. Geol., 4, 1896, p. 101.—Bassler, Bull. U. S. Nat. Mus., 65, 1909, p. 64, fig. 90, 91.
iagaran dolomite: Hamilton, Ontario.

NOGRAPTUS TYPUS Hall. See Thamnograptus capillaris.

Theca forbesii Dawson. Not recognized.

Theca Forbesii (Sharpe) Dawson, Canadian Nat. Geol., 5, 1860, p. 299.

Silurian (Arisaig): Nova Scotia.

Theca niagarensis Grant. Not recognized.

Theca Niagarensis Grant, Jour. and Proc. Hamilton Assoc., 17, 1901, pp. 73, 74.

Niagaran: Near Hamilton, Ontario.

THECA PARVIUSCULA Hall. See Hyolithes parviusculus.

THECIA Edwards and Haime. Genotype: T. swindernana Goldfuss.

Thecia Edwards and Haime, Compt. Rend. de l'Acad. Sci., 29, 1849, p. 262; Mon. d. Polyp. Foss. d. Terr. Pal., 1851 (Arch. du. Mus. d'Hist. Nat., 5), pp. 158, 306.—Pictet, Traité de Pal., 2d ed., 4, 1857, p. 447.—Milne-Edwards, Hist. Nat. d. Corall., 3, 1860, p. 316.—Salter, Cat. Camb. Sil. Foss., 1873, p. 110.—Lindstrom, Ann. Mag. Nat. Hist., 4th ser., 18, 1876, p. 13.—Rominger, Geol. Surv. Michigan, 3, pt. 3, 1876, p. 66.—Nicholson, Tab. Corals Pal. Period, 1879, p. 236.—Zittel, Handb. Pal., 1, 1879, p. 213.—Roemer, Leth. geog., pt. 1, Leth. Pal., 1883, p. 451.—Miller, N. A. Geol. Pal., 1889, p. 207.—Sardeson, Neues Jahrb. Min., Geol. Pal., Beilage-Band, 10, 1896, p. 297.—Lindström, Kongl. Sven. Vet.-Akad. Handl., 32, No. 1, 1899, p. 29.—Pocta, Syst. Sil. du Centre Boheme, 8, pt. 2, 1902, p. 275.—Grabau and Shimer, N. A. Index Fossils, 1, 1906, p. 91.

Thecia major Rominger.

Thecia major Rominger, Geol. Surv. Michigan, 3, pt. 2, 1876, p. 67, pl. 25, figs. 1, 2.—Roemer, Leth. geog., pt. 1, Leth. Pal., 1883, p. 454.—Hall, 12th Ann. Rep. Indiana Dep. Geol. Nat. Hist., 1883, p. 253, pl. 2, fig. 6.—Davis, Kentucky Fossil Corals, Geol. Surv. Kentucky, pt. 2, 1885, pl. 34, figs. 1-3.—Miller, N. A. Geol. Pal., 1889, p. 207, fig. 227.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1186, fig.—Grabau and Shimer, N. A. Index Fossils, 1, 1906, p. 91, fig. 146.

Niagaran: Charleston, etc., Indiana; Louisville, Kentucky (Louisville); Decatur County, etc., Tennessee (Brownsport); Drummonds Island, etc., Lake Huron.

Thecia minor Rominger.

Thecia minor Rominger, Geol. Surv. Michigan, 3, pt. 2, 1876, p. 68, pl. 25, fig. 3.—Davis, Kentucky Fossil Corals, Geol. Surv. Kentucky, pt. 2, 1885, pl. 34, figs. 4, 7.—Grabau and Shimer, N. A. Index Fossils, 1, 1906, p. 91, fig. 147.

Thecia swindernana Roemer, Sil. Fauna West Tennessee, Breslau, 1860, p. 26, pl. 2, fig. 4a, b.—Davis, Kentucky Fossil Corals, Geol. Surv. Kentucky, pt. 2, 1885, pl. 34, figs. 5, 6.

Niagaran: Louisville, Kentucky, and vicinity (Louisville); Decatur County, etc., Tennessee (Brownsport); Drummonds Island, etc., Lake Huron.

Observation.—Considered by some authors as a synonym of T. swindernana.

Thecia swindernana (Goldfuss).

Agaricia Swindernana Goldfuss, Petref. Germ., 1, 1826, p. 109, pl. 38, figs. 2a, b.

Thecia Swindernana Edwards and Haime, Polyp. Foss. Terr. Pal., 1851, p. 306, pl. 2, figs. 4, 4b.—Holtedahl, [Second Arctic Exp. "Fram," 1898–1902, No. 32, 1914, p. 15, pl. 6, fig. 4.

Silurian (Wenlock, Ludlow): Europe; southwestern Ellesmereland, Arctic America.

Observation.—See also Thecia minor Rominger.

ECIA SWINDERNANA Roemer. See Thecia minor.

ECIA VETUSTA Davis. See Protaræa richmondensis.

ECOCYSTIS Jaekel. See Hemicystites subgenus Cystaster Hall.

ECOCYSTIS SACCULUS Jaekel. See Hemicystites (Cystaster) granulatus.

ECOSTEGITES HEMISPHERICUS Roemer. See Fistulipora hemispherica.

LIPSURA SIMPLEX Krause. See Octonaria simplex.

RESHERODISCUS Foerste. Genotype: T. ramosus Foerste.
Thresherodiscus Foerste, Bull. Sci. Lab. Denison Univ., 17, 1914, p. 432.

resherodiscus ramosus Foerste.
Thresherodiscus ramosa Foerste, Bull. Sci. Lab. Denison Univ., 17, 1914, p. 432, pl. 1, fig. 8, pl. 3, fig. 3.
Trenton (Curdsville): Goat Island, northeast of Little Current, Manitoulin Island, Lake Huron.

YSANOCRINUS Hall. See Dimerocrinus Phillips.

YSANOCRINUS (RHODOCRINUS) MICROBASILIS Billings. See Archæocrinus microbasilis.

YSANOCRINUS MILLIGANÆ Miller and Gurley. See Gazacrinus? milliganæ.

YSANOCRINUS (RHODOCRINUS) PYRIFORMIS Billings. See Archæocrinus pyriformis.

HYSANOPYGE Kayser. Genotype: Thysanopyge argentina Kayser.
Thysanopyge Kayser, Zeits. d. d. geol. Gesell., 50, 1898, pp. 425, 427.

hysanopyge argentina Kayser.
Thysanopyge argentina Kayser, Zeits. d. d. geol. Gesell., 50, 1898, p. 425, pl. 16, fig. 2.
Middle Ordovician: Salta, Argentina.

GILLITES Barrois. See Scolithus Hall.

OLMAIA Williams. Genotype: Pterinea lineata Goldfuss.
Tolmaia Williams, Proc. U. S. Nat. Mus., 34, 1908, p. 86.

olmaia campestris Williams.
Tolmaia campestris Williams, Proc. U. S. Nat. Mus., 45, 1913, p. 335, pl. 29, fig. 16.
Silurian (Edmunds): Field Point, west side Cobscook River, Edmunds Township, Washington County, Maine.
Holotype.—Cat. No. 58956, U.S.N.M.

RACHOMATICHNUS Miller. Genotype: T. numerosus Miller.
Trachomatichnus Miller, Jour. Cincinnati Soc. Nat. Hist., 2, 1880, p. 219; N. A. Geol. Pal., 1889, p. 454.

rachomatichnus cincinnatensis Miller.
Trachomatichnus cincinnatensis Miller, Jour. Cincinnati Soc. Nat. Hist., 2, 1880 p. 220, pl. 14, fig. 3.
Eden (Economy): Walker Mill Road, Cincinnati, Ohio.

Trachomatichnus numerosus Miller.
Trachomatichnus numerosus Miller, Jour. Cincinnati Soc. Nat. Hist., 1880, p. 219, pl. 13, figs. 2-4.
Eden (Economy): Walker Mill Road, Cincinnati, Ohio.

Trachomatichnus permultus Miller.
Trachomatichnus permultus Miller, Jour. Cincinnati Soc. Nat. Hist., 2, 1880, p. 220, pl. 13, fig. 5.
Eden (Economy): Walker Mill Road, Cincinnati, Ohio.

TRACHYUM Billings. Genotype: T. cyathiforme Billings.
Trachyum Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 211.—Miller, N. A. Geol. Pal., 1889, p. 166.

Trachyum cyathiforme Billings.
Trachyum cyathiforme Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 211, fig. 196.—Miller, N. A. Geol. Pal., 1889, p. 166, fig. 127.
Canadian (Quebec—G): Cape Norman, Newfoundland.

Trachyum rugosum Billings.
Trachyum rugosum Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 212.
Canadian (Quebec—G): Cape Norman, Newfoundland.

Trachyum undosum James. Not recognized.
Trachyum undosum James, Paleontologist, No. 2, 1878, p. 9.
Clinton: Clinton County, Ohio.

TRAMORIA Reed. See Apatokephalus Brögger.

TREMANOTUS Hall. Genotype: Bellerophon perforatus Winchell and Marcy.
Tremanotus Hall, 20th Rep. New York State Cab. Hist., 1868, pp. 347, 388 (extras, 1865); rev. ed., 1870, p. 399.—Winchell and Marcy, Mem. Boston Soc. Nat. Hist., 1, 1865, p. 109.—Meek, Proc. Chicago Acad. Sci., 1, 1866, p. 10.—Waagen, Mem. Geol. Surv. India, Pal. Indica, 13th ser., 1, 1880, p. 131.—Lindstrom, Kongl. Sven. Vet.-Akad. Handl., 19, No. 6, 1881, pp. 70, 85.—Zittel, Handb. Pal., 2, 1882, p. 184.—Koken, Neues Jahrb. Min., Geol., Pal., 6, Beilage-Band, 1889, pp. 381, 386.—Miller, N. A. Geol. Pal., 1889, p. 428.—Newton, Geol. Mag., dec. 3, 9, 1892, p. 337.—Frech, Zeits. d. d. geol. Gesell., 46, 1894, p. 461.—Koken, Die Leitfossilien, Leipzig, 1896, p. 99; Neues Jahrb. Min., Geol., Pal., 1, 1898, p. 7.—Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 851.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 615.
Trematonotus Pilsbry, Zittel-Eastman Textb. Pal., 1, 1900, p. 445.—Dall, ibid., 2d ed., 1913, p. 521.

Tremanotus alpheus (Hall).
Tremanotus alpheus Hall, 20th Rep. New York State Cab. Nat. Hist., 1868, p. 347, pl. 15 (6), figs. 23, 24; p. 389; rev. ed., 1870, p. 399, pl. 15, figs. 23, 24.—McChesney, Trans. Chicago Acad. Sci., 1, 1868, p. 47, pl. 8, fig. 4.—Hall and Whitfield, Geol. Surv. Ohio Pal., 2, 1875, p. 145, pl. 8, fig. 1.—Whiteaves, Geol. Surv. Canada Pal. Foss., 3, pt. 1, 1884, p. 34.—Lesley, Geol. Surv Pennsylvania, Rep. P 4, 1890, p. 1198, fig.
Trematonotus alpheus Clarke and Ruedemann, Mem. New York State Mus., 5, 1903, p. 54, pl. 5, figs. 20-23; pl. 6, figs. 1-9.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 615, figs. 824, 825.
Bellerophon (Bucania) perforatus Winchell and Marcy, Mem. Boston Soc. Nat. Hist., 1, 1865, p. 100, pl. 8, fig. 7; p. 109.
Niagaran: Chicago, Illinois, and Racine, Wisconsin (Racine); Shelby and Rochester, New York; Ohio; Ontario (Guelph).

Tremanotus angustatus (Hall).
Bucania angustata Hall, Pal. New York, 2, 1852, p. 349, pl. 84, figs. 6a, b; 20th Rep. New York State Cab. Nat. Hist., 1868, p. 346; rev. ed., 1870, p. 398.
Bellerophon angustata Billings, Geol. Canada, Geol. Surv. Canada, 1863, p. 344, fig. 352.
Trematonotus angustatus Whiteaves, Pal. Foss. Geol. Surv. Canada, 3, pt. 2, 1895, p. 70.—Clarke and Ruedemann, Mem. New York State Mus., 5, p. 56.
Niagaran (Guelph): Galt, Guelph, Hespeler, etc., Ontario.
Observation.—Probably the same as Tremanotus alpheus (Hall).

Tremanotus chicagoensis (McChesney).
Bucania chicagoensis McChesney, Desc. New Species Fossils, 1859, p. 69; Plates Illust. New Sp. Fossils, 1865, pl. 8, figs. 4–4b, 5–5b; Trans. Chicago Acad. Sci., 1, 1868, p. 46, pl. 8, fig. 5.—Meek, Proc. Chicago Acad. Sci., 1, 1866, p. 10.
Tremanotus chicagoensis Miller, N. A. Geol. Pal., 1889, p. 428 (gen. ref.).
Trematonotus chicagoensis Clarke and Ruedemann, Mem. New York State Mus., 5, 1903, p. 57.—Kindle and Breger, 28th Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1904, pl. 11, figs. 1, 2, 5; pl. 12, figs. 1, 2.
Niagaran: Chicago, Illinois (Racine); Huntington and Delphi, Indiana.
Plesiotype.—Cat. No. 52941, U.S.N.M. (Kindle and Breger).

Tremanotus crassolaris (McChesney).
Bucania crassolare McChesney, Desc. New Species Fossils, 1861, p. 91.
Niagaran (Racine): Chicago, Illinois.

Tremanotus pervolutus (McChesney).
Bucania pervoluta, McChesney, Desc. New Species Fossils, 1861, p. 91.
Niagaran (Racine): Chicago, Illinois.

Tremanotus? trigonostoma Hall and Whitfield.
Tremanotus? trigonostoma Hall and Whitfield, Pal. Ohio, 2, 1875, p. 146, pl. 8, fig. 5.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1198, fig.
Bucania trigonostoma Whitfield, Geol. Wisconsin, 4, 1882, p. 359.
Niagaran (Guelph): Genoa, Ohio; ?Wisconsin.

TREMATIS Sharpe. Genotype: Orbicula terminalis Sharpe.
Trematis Sharpe, Quart. Jour. Geol. Soc. London, 4, 1848, p. 66, 68.—Emmons, Amer. Geol., 1, pt. 2, 1855, pp. 188, 201.—Pictet, Traite de Pal., 2d ed., 4, 1857, p. 69.—Hitchcock, Geol. Vermont, 1, 1862, p. 293.—Dall, Amer. Jour. Conch., 7, 1871, p. 75; Bull. Mus. Comp. Zool., 3, 1871, p. 37; Bull. U. S. Nat. Mus., 8, 1877, p. 73.—Miller, Cincinnati Quart. Jour. Sci., 2, 1875, p. 14.—Zittel, Handb. Pal., 1, 1880, p. 665.—Miller, N. A. Geol. Pal., 1889, p. 385.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pp. 138, 168.—Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 367.—Hall and Clarke, 11th Ann. Rep. New York State Geol., 1894, p. 258.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 201.—Koken, Die Leitfossilien, Leipzig, 1896, p. 230, figs. 189, 8, 9.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 895.—Schuchert, Zittel-Eastman Textb. Pal., 1, 1900, p. 309; 2d ed, 1913, p. 377.

Trematis crassipuncta Ulrich.
Trematis crassipuncta Ulrich, Amer. Geol., 4, 1889, p. 22; 3, p. 378, fig. 7.
Maysville (Fairmount): Cincinnati, Ohio.
Plastotype.—Cat. No. 44999, U.S.N.M.

Trematis(?) dyeri Miller.

Trematis dyeri Miller, Cincinnati Quart. Jour. Sci., 1, 1874, p. 347, fig. 39; N. A. Geol. Pal., p. 385, fig. 628.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 142.

Maysville (Fairmount): Cincinnati, Ohio.

TREMATIS FILOSA Billings. See Schizocrania filosa.

Trematis fragilis Ulrich.

Trematis fragilis Ulrich, Amer. Geol., 4, 1889, p. 21; 3, p. 378, fig. 6.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 142, pl. 4G, fig. 14.—Foerste, Bull. Sci. Lab. Denison Univ., 16, 1910, p. 38, pl. 5, figs. 2-4.

Trematis punctostriata Hall and Whitfield (not Hall, 1873), Pal. Ohio, 2, 1873, p. 70, pl. 1, figs. 8, 9.

Trenton (upper): West Covington, Kentucky.

Trematis huronensis Billings.

Trematis Huronensis Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 53, fig. 59 (adv. sheets, 1862); Geol. Canada, 1863, p. 159, fig. 130.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 1198, figs.—?Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 368, fig. 29.

Productella minneapolis Sardeson, Bull. Minnesota Acad. Nat. Sci., 3, 1892, p. 332, pl. 4, figs. 11, 12.

Black River: Pallideau Islands, Lake Huron; Minneapolis, Minnesota.

Trematis millepunctata Hall.

Trematis millepunctata Hall, Desc. New Species Crin. and Other Foss., 1866, p. 14; 24th Rep. New York State Cab. Nat. Hist., 1872, p. 221, pl. 7, figs. 22-25.—Hall and Whitfield, Pal. Ohio, 2, 1875, p. 70, pl. 1, figs. 4-7.—Miller, Cincinnati Quart. Jour. Sci., 2, 1875, p. 16; N. A. Geol. Pal., 1889, p. 385, fig. 629.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1199, figs.—Huene, Verh. d. Russ. Kais. Min. Ges. St. Petersburg, 36, 1899, p. 336, fig. 8.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 139, pl. 4G, figs. 4-10.—Raymond, Ann. Carnegie Mus., 3, 1904, p. 86, fig. 4.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 202, figs. 235a, b, d.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 943, pl. 34, figs. 9, 9c.

Eden-Richmond: Cincinnati, Ohio, and vicinity.

Observation.—See T. quincuncialis and T. reticularis for probable synonyms.

Trematis montrealensis Billings.

Trematis Montrealensis Billings, Pal. Fossils, 1, Geol. Surv. Canada, 1865, p. 52, fig. 57 (adv. sheets, 1862); Geol. Canada, 1863, p. 159, fig. 128.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1199, fig.

Trenton: Montreal, Quebec.

Trematis oblata Ulrich.

Trematis oblata Ulrich, Amer. Geol., 4, 1889, p. 23; 3, p. 378, fig. 9.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 142, pl. 4G, fig. 20.

Maysville (Fairmount): Cincinnati, Ohio.

Cotype and *plastotype*.—Cat. Nos. 451991, 45200, U.S.N.M.

Trematis ottawaensis Billings.

Trematis Ottawaensis Billings, Geol. Surv. Canada, Pal. Foss., 1, 1865, p. 53, fig. 58 (adv. sheets, 1862); Geol. Canada, 1863, p. 159, fig. 129; Cat. Sil. Foss. Anticosti, 1866, p. 11.—Lesley, Geol. Surv. Pennsylvania, Rep., P 4, 1890, p. 1199, fig.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 139, pl. 4G,

Trematis ottawaensis—Continued.
figs. 15–17.—Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 369, fig. 30.—Crane, Geol. Mag., dec. 4, 2, 1895, pl. 5, fig. 14.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 202, fig. 235c.
Trenton: Ottawa, Ontario; Trenton Falls, New York; Frankfort, Kentucky; St. Paul, Minnesota.

TREMATIS PUNCTOSTRIATA Hall and Whitfield. See **Trematis fragilis.**

Trematis punctostriata Hall.
Trematis punctostriata Hall, 23d Rep. New York State Cab. Nat. Hist., 1873, p. 243, pl. 13, figs. 17, 18.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 142, pl. 4G, figs. 11–13(?3).—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1199, figs.—Foerste, Jour. Geol., 11, 1903, p. 706 (loc. occ.); Bull. Sci. Lab. Denison Univ., 16, 1910, p. 37, pl. 5, fig. 1.
Trenton (Hermitage): Clifton, Tennessee; Frankfort, Kentucky.

Trematis(?) pustulosa Hall.
Trematis? pustulosa Hall, Descrip. New Species Crin. and other Fossils, 1866, p. 15; 24th Rep. New York State Cab. Nat. Hist., 1872, p. 222.
Richmond (Maquoketa): Near Horicon, Wisconsin.

Trematis quincuncialis Miller and Dyer.
Trematis quincuncialis Miller and Dyer, Cont. to Pal., 2, 1878, p. 8, pl. 3, fig. 9.—Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 452.
Richmond (Waynesville): Near Lebanon, Ohio.
Observation.—Probably the same as T. millepunctata.

Trematis reticularis (Miller).
Crania reticularis Miller, Cincinnati Quart. Jour. Sci., 2, 1875, p. 280, fig. 1; N. A. Geol. Pal., 1889, p. 342, fig. 555.
Trematis reticularis Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 453.—Cumings, 32d Ann. Rep., Dep. Geol. Nat. Res., Indiana, 1908, p. 944, pl. 34, fig. 10.
Richmond: Brookville, Indiana.
Observation.—Probably the same as T. millepunctata.

TREMATIS RUDIS Hall. See Schizocrania(?) rudis.

Trematis terminalis (Emmons).
Orbicula terminalis Emmons, Geol. New York, Rep. 2d Dist., 1842, p. 395, fig. 4.—Hall, Pal. New York, 1, 1847, p. 100, pl. 30, fig. 11.
Trematis terminalis Sharpe, Quart. Jour. Geol. Soc. London, 4, 1848, p. 68, figs. 1–3.—Emmons, Amer. Geology, 2, 1855, p. 201, fig. 63; pl. 8, fig. 11.—Pictet, Traite de Pal., 2d ed., 4, 1857, p. 69, pl. 89, fig. 7.—Emmons, Man. Geol., 1860, p. 99, figs. 88–4a.—Hitchcock, Geol. Vermont, 1, 1862, p. 293, fig. 198.—Billings, Geol. Canada, 1863, p. 159, fig. 127.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1200, figs.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 139, pl. 4G, figs. 1, 2.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 202.
?Trematis terminalis Miller, Cincinnati Quart. Jour. Sci., 2, 1875, p. 14.
Trenton: Middleville, Trenton Falls, Watertown, etc., New York.

Trematis umbonata Ulrich.
Trematis umbonata Ulrich, Amer. Geol., 4, 1889, p. 23; 3, 1889, fig. 8 on p. 378.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 139, pl. 4G, figs. 18, 19.
Maysville (Corryville): Cincinnati, Ohio, and vicinity.
Plastotype.—Cat. No. 44993, U.S.N.M.

TREMATOCYSTIS Jaekel. Genotype: Holocystites subglobosus Miller.
Trematocystis Jaekel, Stammesg. Pelmat., 1, Thecoidea und Cystoidea, Berlin, 1899, p. 413.

Trematocystis hammelli (Miller).
Holocystites hammelli Miller, N. A. Geol. Pal., 1889, p. 254, figs. 336, 337.
Trematocystis hammelli Jaekel, Stammesg. Pelmat., 1, Thecoidea und Cystoidea, Berlin, 1899, p. 413.
Clinton (Osgood): Jefferson County, Indiana.

Trematocystis subglobosus (Miller).
Holocystites subglobosus Miller, N. A. Geol. Pal., 1889, p. 255, fig. 338.
Trematocystis subglobosus Jaekel, Stammesg. Pelmat., 1, Thecoidea und Cystoidea, 1899, p. 414, pl. 4, fig. 2.
Clinton (Osgood): Jefferson Connty, Indiana.

TREMATONOTUS of authors. See Tremanotus Hall.

TREMATOPORA Hall. Genotype: T. tuberculosa Hall.
Trematopora Hall, Amer. Jour. Sci., 2d ser., 11, 1851, p. 400; Pal. New York, 2, 1852, p. 149.—Zittel, Handb. Pal., 1, 1880, p. 617.—Roemer, Leth. geog., 1, Leth. Pal., 1883, p. 479.—Hall and Simpson, Nat. Hist. New York, 6, 1887, p. 14.—Miller, N. A. Geol. Pal., 1889, p. 328.—Ulrich, Geol. Surv. Illinois, 7, 1890, pp. 373, 418; Geol. Minnesota, 3, 1893, p. 308.—Simpson, 14th Ann. Rep. State Geol. New York for 1894, 1897, p. 501.—Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 35.—Grabau, Bull. New York State Mus., 45, 1901, p. 166; Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 166.—Pocta, Syst. Sil. du Centre Boheme, pt. 2, 1902, p. 314.—Bassler, Bull. U. S. Geol. Surv., 292, 1906, p. 43.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 139.—Bassler, Bull. U. S. Nat. Mus., 77, 1911, pp. 267, 268.

TREMATOPORA Ulrich, 1882. See Homotrypa Ulrich.

TREMATOPORA ANNULIFERA Whitfield. See Lioclemella annulifera.

TREMATOPORA ASPERA Hall. See Acanthoclema asperum.

Trematopora calloporoides Ulrich.
Trematopora calloporoides Ulrich, Geol. Surv. Illinois, 8, 1890, p. 420, pl. 38, figs. 1–1d.
Upper Medinan (Girardeau): Alexander County, Illinois.
Cotype.—Cat. No. 43803, U.S.N.M.

TREMATOPORA COALESCENS Hall. See Chilotrypa ostiolata.

Trematopora crebripora Hall. Not recognizable.
Trematopora (Chætetes) crebripora Hall, Trans. Albany Inst., 10, 1883, p. 59 (abstract 1879, p. 3); 11th Ann. Rep. Indiana Geol. Nat. Hist., 1882, p. 236.
Niagaran (Waldron): Waldron, Indiana.

Trematopora debilis Ulrich.
Trematopora debilis Ulrich, Geol. Surv. Illinois, 8, 1890, p. 419, pl. 34, figs. 3–3e.
Upper Medinan (Girardeau): Alexander County, Illinois.
Fragment of *holotype.*—Cat. No. 43802, U.S.N.M.

TREMATOPORA ECHINATA Hall. See Eridotrypa echinata.

Trematopora?? granulata Whitfield.
Trematopora granulata Whitfield, Ann. Rep. Geol. Surv. Wisconsin for 1877, 1878, p. 68; Geol. Surv. Wisconsin, 4, 1882, p. 253, pl. 11, figs. 22, 23.
Richmond (Maquoketa): Delafield, Wisconsin.

TREMATOPORA GRANULIFERA Hall. See Batostomella granulifera.

Trematopora halli Ulrich.
Trematopora halli Ulrich, Jour. Cincinnati Soc. Nat. Hist., 6, 1883, p. 261, pl. 13, figs. 3, 3a.
Niagaran (Waldron): Waldron, Indiana; Newsom, Tennessee.
Cotypes.—Cat. No. 44107, U.S.N.M.

TREMATOPORA INFREQUENS Hall. See Diamesopora infrequens.

Trematopora irregularis (Billings).
Helopora irregularis Billings, Catal. Sil. Foss. Anticosti, 1866, p. 39.
Anticostian (Jupiter River): Challoupe River, Anticosti.

TREMATOPORA? (TRACHYPORA?) MACROPORA Hall. See Nematopora macropora.

TREMATOPORA? (TRACHYPORA?) MINUTA Hall. See Nematopora minuta.

TREMATOPORA? NITIDA Ulrich. See Lioclemella nitida.

TREMATOPORA ORNATA Ulrich. See Trematopora? primigenia ornata.

TREMATOPORA OSCULUM Hall. See Diamesopora osculum.

TREMATOPORA OSTIOLATA Hall. See Chilotrypa ostiolata.

Trematopora primigenia Ulrich.
Trematopora primigenia Ulrich, 14th Ann. Rep. Geol. Nat. Hist. Surv. Minnesota, 1886, p. 97; Geol. Minnesota, 3, 1893, p. 309, pl. 21, figs. 23–40.—Bassler, Bull. U. S. Nat. Mus., 77, 1911, pp. 268, 269, fig. 158.
Black River (Decorah): Minneapolis, St. Paul, etc., Minnesota.
Middle Ordovician (Wassalem): Uxnorm, Esthonia, Russia.
Cotypes.—Cat. No. 43615, U.S.N.M.

Trematopora primigenia ornata (Ulrich).
Trematopora ornata Ulrich, 14th Ann. Rep. Geol. Nat. Hist. Surv. Minnesota, 1886, p. 98.
Trematopora? primigenia var. ornata Ulrich, Geol. Minnesota, 3, 1893, p. 310, pl. 21, figs. 26, 28, 33, 34.
Black River (Decorah): St. Paul, Minnesota, and vicinity.
Holotype.—Cat. No. 43616, U.S.N.M.

Trematopora? primigenia spinosa Ulrich.
Trematopora? primigenia var. spinosa Ulrich, Geol. Minnesota, 3, 1893, p. 310, pl. 21, figs. 29, 30, 35, 36.
Black River (Decorah): St. Paul, Minnesota, and vicinity.
Cotypes.—Cat. No. 43617, U.S.N.M.

TREMATOPORA?? PUNCTATA Hall. See Idiotrypa punctata.

Trematopora? singularis (Hall).
Callopora singularis Hall, 28th Ann. Rep. New York State Mus., doc. ed., 1876, pl. 10, figs. 1, 2; ibid., mus. ed., 1879, p. 115, pl. 10, figs. 1, 2; 11th Ann. Rep. Indiana Geol. Nat. Hist., 1882, p. 237, pl. 9, figs. 1, 2.
Leioclema singulare Ulrich, Geol. Surv. Illinois, 8, 1890, p. 425.
Trematopora? singularis Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 434.
Niagaran (Waldron): Waldron, Indiana.

TREMATOPORA SOLIDA Hall. See Eridotrypa solida.

TREMATOPORA SPARSA Hall. See Diploclema sparsum.

Trematopora spiculata Miller.

Trematopora spinulosa Hall (not Hall, 1852), 28th Ann. Rep. New York State Mus., doc. ed., 1876, pl. 11, figs. 11, 12.

Trematopora spiculata Miller, Amer. Pal. Foss., 2d ed., 1877, p. 245.—Hall, 28th Ann. Rep. New York State Mus., mus. ed., 1879, p. 114, pl. 11, figs. 11, 12; 11th Ann. Rep. Indiana Geol. Nat. Hist., 1882, p. 235, pl. 10, figs. 11, 12.—Ulrich, Jour. Cincinnati Soc. Nat. Hist., 6, 1883, p. 258.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1201, figs.—Bassler, Bull. U. S. Geol. Surv., 292, 1906, pp. 45, 46, pl. 27, figs. 14, 15.

Niagaran: Waldron, Indiana (Waldron); Lockport, New York (Rochester); Osgood, Indiana (Osgood).

Plesiotype.—Cat. No. 35760, U.S.N.M.

TREMATOPORA SPINULOSA Hall. See Bythopora spinulosa.

TREMATOPORA STRIATA Hall. See Eridotrypa striata.

TREMATOPORA SUBIMBRICATA Hall. See Diamesopora subimbricata.

TREMATOPORA SUPERBA Billings. See Lyellia superba.

Trematopora tuberculosa Hall.

Trematopora tuberculosa Hall, Pal. New York, 2, 1852, p. 149, pl. 40A, figs. 1a-g.—Ulrich, Jour. Cincinnati Soc. Nat. Hist., 6, 1883, p. 259, pl. 13, figs. 2-2b.—Simpson, 14th Ann. Rep. State Geol. New York for 1894, 1897, pl. 19, figs. 1-5.—Grabau, Bull. New York State Mus., 45, 1901, p. 166, fig. 65; Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 166, fig. 65.—Bassler, Bull. U. S. Geol. Surv., 292, 1906, pp. 43, 44, pl. 13, figs. 15, 16; pl. 17, figs. 1-3; pl. 25, fig. 8.—Grabau and Shimer, N. A. Index Fossils, 1, p. 139, fig. 193.

Clinton: Lockport, Lewiston, Niagara Gorge, etc., New York; Grimsby and Thorold, Ontario (Rochester); Osgood, Indiana (Osgood).

Plesiotype.—Cat. No. 43618, U.S.N.M.

TREMATOPORA TUBULOSA Hall. See Diamesopora? tubulosa.

TREMATOPORA VARIA Hall. See Chilotrypa varia.

TREMATOPORA VARIOLATA Hall. See Chilotrypa variolata.

Trematopora whitfieldi Ulrich.

Trematopora whitfieldi Ulrich, Jour. Cincinnati Soc. Nat. Hist., 6, 1888, p. 262, pl. 13, figs, 4, 4a.—Bassler, Bull. U. S. Geol. Surv., 292, 1906, pp. 44, 45, pl. 23, figs. 16, 17; pl. 27, figs. 16, 17.

Niagaran: Waldron, Indiana (Waldron); Lockport, New York (Rochester).

Cotypes.—Cat. No. 44108, U.S.N.M.

TREMATOSPIRA Hall. Genotype: Spirifer? perforatus Hall.

Trematospira Hall, Pal. New York, 3, 1859, p. 207; 12th Rep. New York State Cab. Nat. Hist., 1859, p. 27; 16th Rep., ibid., 1863, p. 54; Pal. New York, 4, 1867, p. 271.—Miller, Cincinnati Quart. Jour. Sci., 2, 1875, p. 60.—Davidson, Mon. British Foss. Brach., 5, Sil. Suppl., Pal. Soc., 1882, p. 82.—Miller, N. A. Geol. Pal., 1889, p. 385.—Nettelroth, Kentucky Fossil Shells, Mem. Kentucky Geol. Surv., 1889, p. 135.—Hall and Clarke, Pal. New York, 8, pt. 2, 1893, p. 124; 13th Ann. Rep. New York State Geol., 1895, p. 798.—Grabau, Bull. Buffalo Soc. Nat. Sci., 6, 1899, p. 221; ibid., 7, 1901, p. 201; Bull. New York State Mus., 45, 1901, p. 201.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 345.—Schuchert, Zittel-Eastman Textb. Pal., 1, 1900, p. 337; 2d ed., 1913, p. 414.

TREMATOSPIRA ACADIÆ Hall. See Rhynchospira(?) acadiæ.

Trematospira camura Hall.
Atrypa camura Hall, Pal. New York, 2, 1852, p. 273, pl. 56, fig. 3.
Rhynchonella camura Billings, Geol. Canada, 1863, p. 315, fig. 322.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 884, figs.
Trematospira camura Hall, Pal. New York, 3, 1859, p. 212, pl. 28A, fig. 1.—Hall and Clarke, Pal. New York, 8, pt. 2, 1893, p. 126, pl. 49, figs. 2-4.—Grabau, Bull. New York State Mus., 45, 1901, p. 201, fig. 122; Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 201, fig. 122.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 345, fig. 443.
Clinton (Rochester): Lockport and Niagara Falls, New York.

Trematospira camura pauciplicata Foerste.
Trematospira camura-pauciplicata Foerste, Cincinnati Soc. Nat. Hist., Jour., 21, 1909, p. 18, pl. 2, figs. 9A, B.
Clinton (West Union): West Union, Ohio.

TREMATOSPIRA? DISPARILIS Hall. See Atrypina disparilis.

TREMATOSPIRA (RHYNCHOSPIRA) GLOBOSA Hall. See Rhynchospira globosa.

Trematospira granulifera Meek.
Retzia (Trematospira) granulifera Meek, Proc. Acad. Nat. Sci. Philadelphia, 1872, p. 318; Pal. Ohio, 1, 1873, p. 128, pl. 11, fig. 6.
Retzia(?) granulifera Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 345.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 930, pl. 36, figs. 5-5c.
Trematospira(?) granulifera Miller, Cincinnati Quart. Jour. Sci., 2, 1875, p. 61.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1204, figs.—Foerste, Bull. Sci. Lab. Denison Univ., 17, 1912, p. 133, pl. 8, fig. 5.
Cincinnatian: Cincinnati, Ohio.

Observation.—This name might as well be dropped, for the type is in all probability a specimen of some Devonian species (T. gibbosa?).

TREMATOSPIRA HELENA Nettelroth. See Rhynchospira (?) helena.

TREMATOSPIRA MATTHEWSONI McChesney. See Atrypa marginalis.

TREMATOSPIRA? QUADRIPLICATA Miller. See Rhynchotrema inæquivalve.

Trematospira simplex Hall.
Trematospira simplex Hall, Pal. New York, 3, 1859, p. 211, pl. 28A, fig. 2.—Hall, and Clarke, Pal. New York, 8, pt. 2, 1895, pl. 49, figs. 17, 18.
Niagaran (Brownsport): Decatur County, Tennessee.

TRENTONASTER Sturtz. See Schuchertia Gregory.

TRETASPIS McCoy. Genotype: Asaphus seticornis Hisinger.
Tretaspis McCoy, Ann. Mag. Nat. Hist., 2d ser., 4, 1849, pp. 401, 410, fig.—Salter, Mem. Geol. Surv. United Kingdom, dec. 7, 1853, pl. 7.—McCoy, Cont. British Pal., 1854, p. 149, fig.; British Pal. Rocks, Fossils, 1854, p. 146.—Nicholson and Etheridge, Mon. Sil. Foss. Girvan Dist., 1880, p. 188.—Œhlert, Bull. Soc. Geol. France, 3d ser., 23, 1895, p. 312, footnote.—Reed, Geol. Mag., dec. 4, 5, 1898, p. 445.—Raymond, Zittel-Eastman Textb. Pal., 2d ed., 1913, p. 711.

Tretaspis diademata Ruedemann.

Tretaspis diademata Ruedemann, Bull. New York State Mus., 49, 1902, p. 49, pl. 3, figs. 13, 14.

Mohawkian (Rysedorph): Rysedorph Hill, Rensselaer County, New York.

Tretaspis reticulata Ruedemann.

Tretaspis reticulatus Ruedemann, Bull. New York State Mus., 49, 1902, p. 41 pl. 3, fig. 11, 15-20.—Bassler, Bull. Virginia Geol. Surv., 2a, 1909, pl. 3, figs. 20, 21.

Mohawkian: Rysedorph Hill, Rensselaer County, New York (Rysedorph); Maryland and Virginia (Chambersburg).

TRIACRINUS D'Orbigny. See Pisocrinus DeKoninck.

Trianisites Rafinesque. Not recognized.

Trianisites Rafinesque, Amer. Jour. Sci. Arts, 3, 1821, p. 286; Bull. Soc. Geol. France, 10, 1839, p. 380.

Trianisites cliffordi Rafinesque. Not recognized.

Trianisites cliffordi Rafinesque, Amer. Jour. Sci. Arts, 3, 1821, p. 286, pl. 1, fig. A; Bull. Soc. Geol. France, 10, 1839, p. 379.

Trenton: Near Lexington, Kentucky.

Observation.—Probably refers to some hemispheric bryozoan.

Trianisites conradi Rafinesque. Not recognized.

Trianisites Conradi Rafinesque, Bull. Soc. Geol. France, 10, 1839, p. 379.

Islands of St. Lawrence River.

TRIARTHRUS Green. Genotype: Triarthrus beckii Green.

Triarthrus Green, Mon. Tril. N. A., 1832, p. 86; Monthly Amer. Jour. Geol., 1, 1832, p. 560; Amer. Jour. Sci., 33, 1838, pp. 343, 344.—Haldeman, ibid., 2d ser., 5, 1848, p. 107.—Barrande, Neues Jahrb. Min. Geol. Pal., 1850, p. 779.—Pictet, Traite de Pal., 2d ed., 1854, p. 492.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 214.—Hitchcock, Geol. Vermont, 1, 1862, p. 308.—Chapman, Canadian Jour., n. s., 8, 1863, p. 32; Expos. Min. Geol. Canada, 1864, p. 140.—Miller, Cincinnati Quart. Jour. Sci., 1, 1874, p. 146.—Zittel, Handb. Pal., 2, 1885, p. 598.—Miller, N. A. Geol. Pal., 1889, p. 568.—Beecher, Amer. Jour. Sci., 3d ser., 46, 1893, pp. 378, 467; ibid., 47, 1894, p. 298.—Walcott, Geol. Mag., dec. 4, 1, 1894, p. 247.—Bernard, Quart. Jour. Geol. Soc. London, 51, 1895, p. 352.—Koken, Die Leitfossilien, Leipzig, 1896, p. 19, fig. 11, fig. 1.—Œhlert, Bull. Soc. Geol. France, 3d ser., 24, 1896, p. 111, figs. 25, 26.—Beecher, Geol. Mag., dec. 4, 3, 1896, p. 193; Amer. Jour. Sci., 4th ser., 1, 1896, pp. 251-256; ibid., 3, 1897, p. 184; Zittel-Eastman Textb. Pal., 1, 1900, p. 629.—Jaekel, Zeits. d. d. geol. Gesell., 53, 1901, p. 136; ibid., 54, Brief Mitth., 1902, p. 55.—Beecher, Amer. Jour. Sci., 4th ser., 13, 1902, p. 165; Geol. Mag., dec. 4, 9, 1902, pp. 152-157.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 286.—Raymond, Zittel-Eastman Textb. Pal., 1913, p. 715.

Triarthrus becki Green.

Triarthrus beckii Green, Mon. Tril. N. A., 1832, p. 87, cast 34, pl. 1, fig. 6; Monthly Amer. Jour. Geol., 1, 1832, p. 560, pl. 1, fig. 3.—Harlan, Trans. Geol. Soc. Pennsylvania, 1, 1835, p. 205, pl. 15, fig. 6; Med. Phys. Res., 1835, p. 400, pl., fig. 6.—Green, Suppl. Tril. N. A., 1835, p. 7; Amer. Jour. Sci. Arts, 33, 1838, p. 142, fig. 2.—Emmons, Geol. New York, 2, 1842, p. 399, text fig. 1; p. 279, text fig. 1.—Vanuxem, ibid., 3, 1842, p. 57, fig. 1.—Mather, ibid., 1, 1843, p. 390, fig. 1.—Burmeister, Org. Tril., Berlin, 1843, p. 133.—Owen, Amer.

riarthrus becki—Continued.

Jour. Sci., 47, 1844, p. 371, fig. 1; p. 370, fig.—Hall, Amer. Jour. Sci., 2d ser., 5, 1848, pp. 322–327, figs.—Roemer, Neues Jahrb. Min. Geol. Pal., 1848, p. 179.—Haldeman, Amer. Jour. Sci., 2d ser., 8, 1848, p. 137.—Emmons, Amer. Assoc. Adv. Sci., 1849, p. 17; Amer. Geology, 1, pt. 2, 1855, p. 214, pl. 15, fig. 12; pl. 17, fig. 13.—Billings, Canadian Nat. Geol., 4, 1859, p. 383.—Lincklaen, 14th Rep. New York State Cab. Nat. Hist., 1861, p. 49, pl. 4, fig. 13.—Barrande, Bull. Soc. Geol. de France, 2d ser. 18, 1861, p. 269, pl. 5, figs. 11, 12.—Hitchcock, Geol. Vermont, 1, 1861, pp. 308, 322.—Billings, Geol. Canada, Geol. Surv. Canada, 1863, p. 202, fig. 202.—Chapman, Canadian Jour. n. s., 8, 1863, p. 32, fig. 149; p. 203, fig. 200.—Expos. Min. Geol. Canada, 1864, p. 140, fig. 149; p. 175, fig. 200.—Linnarsson, Kongl. Sven. Vet.-Akad. Handl., 8, No. 2, 1869, p. 70, pl. 1, fig. 27.—Miller, Cincinnati Quart. Jour. Sci., 1, 1874, p. 146.—Nicholson, Rep. Pal. Prov. Ontario, pt. 2, 1875, p. 39.—Walcott, Trans. Albany Inst., 10, 1876 (adv. sheets, 1879), p. 23, pl. 2, figs. 1–15, pp. 3, footnote, 9 (loc. occ.).—Emerson, Narrative Hall's Sec. Arctic Exped., U. S. Navy Dep., 1879, p. 582.—Ford, Amer. Jour. Sci., 3d ser., 19, 1880, p. 152.—Miller, N. A. Geol. Pal., 1889, p. 568, fig. 1062.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1208, figs.—W. D. Matthew, Trans. New York Acad. Sci., 12, 1893, p. 237, pl. 8; Amer. Jour. Sci., 3d ser., 46, 1893, p. 121, pl. 1, figs. 1–7.—Beecher, ibid., 1893, p. 378, fig. 1, p. 467, figs. 1–4.—Walcott, Proc. Biol. Soc. Washington, 9, 1894, pl. 1, figs. 1–6; Geol. Mag., dec. 4, 1, 1894, pl. 8, figs. 1–6.—Bernard, Quart. Jour. Geol. Soc. London, 50, 1894, p. 425, fig. 11; p. 426, fig. 12.—Beecher, Amer. Jour. Sci., 3d ser., 47, 1894, p. 298, fig. 1, pl. 7, figs. 1–4.; Amer. Geol., 13, 1894, pp. 38–43, pl. 3, figs. 1–9; ibid., 15, 1895, pp. 91–100, pl. 4, fig. 1; pl. 5, figs. 1–11; ibid., 16, 1895, p. 172, pl. 8, figs. 12–14; pl. 10, fig. 1; Amer. Jour. Sci., 4th ser., 1, 1896, p. 256, pl. 8, figs. 1, 2.—Barnard, Sci. American Suppl., 40, 1895, p. 16534.—Beecher, Geol. Mag., dec. 4, 3, 1896, pl., figs. 1, 2.—Œhlert, Bull. Soc. Geol. France, 3d ser., 24, 1896, pp. 99–108, figs. 1–17; p. 115, figs. 34.—Jaekel, Zeits. d. d. geol. Gesell., 53, 1901, p. 161, fig. 24, p. 162.—Beecher, Amer. Jour. Sci., 4th ser., 13, 1902, pl. 2, figs. 1–5; pl. 3, fig. 1; pl. 4, fig. 1; pl. 5, figs. 2–4; Geol. Mag., dec. 4, 9, 1902, p. 155, figs. 1–3, pls. 9, 10, 11.—Perkins, Rep. State Geol. Vermont, 3, 1902, p. 169, fig.—Bassler, Bull. Virginia Geol. Surv., 2a, 1909, pl. 7, figs. 6–8.—Grabau and Shimer, N. A. Index Fossils, 2, p. 286, fig. 1590.

Brongniatia carcinodea Eaton, Geol. Textb., 2d ed., 1832, p. 33, pl. 1, fig. 3; Amer. Jour. Sci. Arts, 22, 1832, p. 166.

Cancer trilobioides Eaton, Amer. Jour. Sci. Arts., 21, 1832, p. 135.

Paradoxides triarthrus Harlan, Trans. Geol. Soc. Pennsylvania, 1, 1835, p. 264, pl. 15, fig. 5; Med. Phys. Res., 1835, p. 401, pl. fig. 5.

Paradoxides arcuatus Harlan, Trans. Geol. Soc. Pennsylvania, 1, 1835, p. 265, pl. 15, figs. 1–3; Med. Phys. Res., 1835, p. 401, pl. figs. 1–3.

Paradoxides Beckii Hall, Amer. Jour. Sci., 33, 1838, p. 142, fig. 1.

Paradoxides Eatoni Hall, Amer. Jour. Sci., 33, 1838, fig. 2.

Olenus arcuatus Goldfuss, Neues Jahrb. Min., Geol., Pal., 1843, p. 545 (gen. ref.).

Olenus triarthrus Goldfuss, Neues Jahrb. Min., Geol., Pal., 1843, p. 545 (gen. ref.).

Calymene beckii Hall, Pal. New York, 1, 1847, pp. 237, 250, pl. 66, figs. 2a–k.—Rogers, Geol. Pennsylvania, 2, pt. 2, 1858, p. 820, fig. 613.—Emmons, Man. Geol., 1860, p. 100, fig. 89; p. 101, fig. 91.

Trenton, Utica and Eden: Various localities in the United States and Canada.

Plastotypes.—Cat. No. 4966, U.S.N.M.

Triarthrus becki macasteyensis Twenhofel.

Triarthrus becki macasteyensis Twenhofel, Bull. Victoria Mem. Mus., 3, 1914, p. 35.

Trenton (Macasty): Macasty Bay, Anticosti.

Triarthrus belli Matthew.

Triarthrus belli Matthew, Bull. Nat. Hist. Soc. New Brunswick, No. 20, 1902, p. 412, pl. 18, fig. 8; Geol. Surv. Canada, Rep. Cambrian Rocks Cape Breton, 1903, p. 230, pl. 18, fig. 8.

Canadian (Bretonian—Div. C 3c 2): McLeod Brook, near Boisdale, Cape Breton, Nova Scotia.

Triarthrus billingsi Barrande.

Triarthrus Billingsi Barrande, Syst. Sil. du Centre Boheme, 1, Suppl., 1872, p. 427, pl. 32, figs. 4, 5.

Trenton (Collingwood): Cape Tourmente, below Quebec, Canada.

Triarthrus canadensis Smith.

Triarthrus canadensis Smith, Canadian Jour., n. s., 6, 1861, p. 275, fig.

Trenton (Collingwood): Whitby, Ontario.

Triarthrus fischeri Billings.

Triarthrus Fischeri Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 291, fig. 280.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 286.

Atops fischeri Miller, N. A. Geol. Pal., 1889, p. 532 (gen. ref.).

Chazyan (Quebec—N, P): Table Head, Pistolet Bay, and Portland Creek, Newfoundland.

Triarthrus glaber Billings.

Triarthrus glaber Billings, Canadian Nat. Geol., 4, 1859, pp. 382, 383; Geol. Canada, Geol. Surv. Canada, 1863, p. 202, fig. 198.—Chapman, Expos. Min. Geol. Canada, 1864, p. 140.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1209, fig.—Ami, Canadian Rec. Sci., 1892, p. 29.

Trenton (Collingwood): Lake St John, Quebec.

Triarthrus spinosus Billings.

Triarthrus spinosus Billings, Geol. Surv. Canada, Rep. Progr. for 1853–1856, 1857, p. 340; Canadian Nat. Geol., 4, 1859, p. 383; Geol. Canada, Geol. Surv. Canada, 1863, p. 202, fig. 199.—Chapman, Expos. Min. Geol. Canada, 1864, p. 140.—Ami, Trans. Ottawa Field Nat. Club, 1, No. 3, 1882, p. 64; ibid., 1883, p. 88, pl. 1, fig.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 1209, fig.

Trenton (Collingwood): Gloucester, Ontario.

TRIBLIDIUM of authors. See Tryblidium Lindstrom and Archinacella Ulrich and Scofield.

TRIBLIDIUM STRIATUM Miller. See Helcionopsis striata.

TRIBLIDIUM UNGUIFORME Miller. See Vallatotheca unguiformis.

TRICHOPHYCUS Miller and Dyer. Genotype: T. lanosum Miller and Dyer.

Trichophycus Miller and Dyer, Jour. Cincinnati Soc. Nat. Hist., 1, 1878, p. 24.—James, ibid., 7, 1884, p. 130, 158.—Miller, N. A. Geol. Pal., 1889, p. 147.

Trichophycus lanosum Miller and Dyer.

Trichophycus lanosus Miller and Dyer, Jour. Cincinnati Soc. Nat. Hist., 1, 1878, p. 25, pl. 1, figs. 3, 4.—James, ibid., 7, 1885, p. 158, 159, pl. 9, fig. 4.—Miller, N. A. Geol. Pal., 1889, p. 147, fig. 82.

Maysville (Corryville): Warren County, Ohio.

Trichophycus silurianum (James).
Cyathophycus siluriana, James, J. F., Jour. Cincinnati Soc. Nat. Hist., 14, pt. 1, 1891, p. 64, figs. 5a–c.
Maysville (Corryville): Cincinnati, Ohio.
Observation.—Probably the same as T. lanosum.

Trichophycus sulcatum Miller and Dyer.
Trichophycus sulcatum Miller and Dyer, Contr. to Pal., No. 2, 1878, p. 4, pl. 4, fig. 5.—James, Jour. Cincinnati Soc. Nat. Hist., 7, 1884, p. 131, pl. 6, fig. 5; ibid., 14, 1891, p. 46.
Eden (Economy): Cincinnati, Ohio.

Trichophycus venosum Miller.
Trichophycus venosum Miller, Jour. Cincinnati Soc. Nat. Hist., 2, 1879, p. 112, pl. 9, figs. 5, 5a; ibid., 7, 1884, p. 131; ibid., 14, 1891, p. 46.
Maysville (Fairmount): Cincinnati, Ohio.

TRICHOSPONGIA Billings. Genotype: T. sericea Billings.
Trichospongia Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 357.—Hinde, Quart. Jour. Geol. Soc. London, 45, 1889, p. 145.—Miller, N. A. Geol. Pal., 1889, p. 166.—Rauff, Palæontographica, 40, 1894, p. 242.

Trichospongia hystrix Whiteaves.
Trichospongia hystrix Whiteaves, Pal. Foss. Geol. Surv. Canada, 3, pt. 3, 1897, p. 147, pl. 17, fig. 3.
Black River or Richmond: Cat. Head, Lake Winnipeg, Canada.

Trichospongia sericea Billings.
Trichospongia sericea Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, pp. 356, 357.—Bornemann, Verst. Cambr. Sardin. N. Act. Leop. Carol. Akad. Naturf., 51, 1886, p. 33.—Hinde, Quart. Jour. Geol. Soc. London, 45, 1889, p. 145.—Rauff, Palæontographica, 40, 1894, p. 242.
Canadian (Romaine): Mingan Islands, Canada.

TRIGONOCEPHALUS Zenker. See Conocephalites Zenker.

TRIGONODICTYA Ulrich. Genotype: Pachydictya conciliatrix Ulrich.
Trigonodictya Ulrich, Geol. Minnesota, 3, 1893, p. 160.—Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 49.

Trigonodictya conciliatrix (Ulrich).
Pachydictya conciliatrix Ulrich, 14th Ann. Rep. Geol. Nat. Hist. Surv. Minnesota, 1886, p. 76.
Trigonodictya conciliatrix Ulrich, Geol. Minnesota, 3, 1893, p. 160, pl. 9, figs. 11, 12; pl. 10, figs. 15–20.
Black River (Decorah): Cannon Falls, Minnesota.
Cotypes.—Cat. No. 43596, U.S.N.M.

Trigonodictya eatonensis Ulrich.
Trigonodictya eatonsis Ulrich, Geol. Minnesota, 3, 1893, p. 160.—Foerste, Geol. Surv. Ohio, 7, 1895, p. 599.
Upper Medinan (Brassfield): Eaton, Ohio.
Cotypes.—Cat. No. 43595, U.S.N.M.

TRIGONOGRAPTUS Nicholson. Genotype: T. lanceolatus Nicholson.
Trigonograpsus Nicholson, Ann. Mag. Nat. Hist., 4th ser., 4, 1869, p. 231; Mon. British Grapt., 1872, p. 122.

TRIGONOGRAPTUS—Continued.

Trigonograptus Zittel, Handb. Pal., 1, 1879, p. 302.—Koken, Die Leitfossilien, Leipzig, 1896, p. 329.—Roemer and Frech, Leth. geog., 1 Theil, Leth. Pal., 1, 3 Lief, 1897, p. 624.—Ruedemann, Mem. New York State Mus., 7, pt. 1, 1904, pp. 726, 727.

Trigonograptus ensiformis (Hall).

Graptolithus ensiformis Hall, Geol. Surv. Canada, Rep. Progr. for 1857, 1858, p. 133; Canadian Nat. Geol., 3, 1858, p. 167.

Retiolites ensiformis Hall, Geol. Surv. Canada, dec. 2, 1865, p. 114ff, pl. 14, figs. 1-5.—Roemer and Frech, Leth. geog., 1 Thiel, Leth. Pal., 1, 3 Lief., 1897, p. 667, footnote.

Trigonograptus ensiformis Hopkinson and Lapworth, Quart. Jour. Geol. Soc., 31, 1875, p. 659ff, pl. 34, figs. 8a-c.—Ami, Rep. Geol. Surv. Canada, 2d ser., 3, pt. 2, 1889, p. 117k.—Nicholson, Geol. Mag., 3d ser., 7, 1890, pp. 340, 341, figs. 1, 2.—Elles, Quart. Jour. Geol. Soc. London, 54, 1898, pp. 523, 524, fig. 34.—Ruedemann, Ann Rep. New York State Pal., 1902, p. 571; Mem. New York State Mus., 7, pt. 1, 1904, pp. 727-729, pl. 17, figs. 1-9.

Canadian: Point Levis, Quebec (Levis, Diplograptus dentatus zone); Deepkill, Rensselaer County, and Mount Moreno, New York (Deepkill, D. dentatus zone); Arkansas; England (Skiddaw).

TRIGYRA Raymond. Genotype: T. ulrichi Raymond.

Trigyra Raymond, Ann. Carnegie Mus., 4, 1908, p. 198.

Trigyra ulrichi Raymond.

Trigyra ulrichi Raymond, Ann. Carnegie Mus., 4, 1908, p. 198, pl. L, fig. 6.

Chazyan (Day Point): Isle La Motte, Vermont.

Holotype.—Cat. No. 53630, U.S.N.M.

TRILOBITES ALATUS Boeck. See Sphærophthalmus alatus.

TRIMERELLA Billings. Genotype: T. grandis Billings.

Trimerella Billings, Pal. Fossils, 1, 1862, p. 166.—Dall, Amer. Jour. Conch., 6, 1870, p. 160; ibid., 7, 1871, p. 79.—Davidson and King, Quart. Jour. Geol. Soc. London, 30, 1874, p. 143.—Dall, Bull. U. S. Nat. Mus., 8, 1877, p. 74.—Zittel, Handb. Pal., 1, 1880, p. 668.—Miller, N. A. Geol. Pal., 1889, p. 386.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pp. 33, 46, 163; 11th Ann. Rep. New York State Geol., 1894, p. 236.—Koken, Die Leitfossilien, Leipzig, 1896, p. 231, fig. 190, 3.—Schuchert, Zittel-Eastman Textb. Pal., 1, 1900, p. 306; 2d ed. 1913, p. 373.—Whiteaves, Ottawa Nat., 16, 1902, p. 139.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 191.

Gotlandia Dall, Amer. Jour. Conch., 6, 1870, p. 160.

Trimerella acuminata Billings.

Trimerella acuminata Billings, Pal. Fossils, 1, 1862, pp. 167, 168, fig. 152; Amer. Jour. Sci., 3d ser., 1, 1871, p. 471; Ann. Mag. Nat. Hist., 4th ser., 8, 1871, p. 140.—Dall, Amer. Jour. Conch., 7, 1871, p. 82.—Davidson and King, Quart. Jour. Geol. Soc. London, 30, 1874, p. 146, pl. 15, figs. 4-7; pl. 16, figs. 1, 2.—Nicholson, Pal. Prov. Ontario, 1875, p. 68, fig. 36.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pl. 4B, fig. 6.—Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 2, 1895, p. 54.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 191.

Niagaran: Galt, New Hope, and Hespelar, Ontario; near Hillsboro, Ohio (Guelph); Port Byron, Illinois; Gotland and Farö.

Trimerella billingsi Dall.

Trimerella billingsi Dall, Amer. Jour. Conch., 7, 1871, p. 82, pl. 11, figs. 1-3.—Davidson and King, Quart. Jour. Geol. Soc. London, 30, 1874, p. 150, pl. 16, figs. 8, 9.—Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 2, 1895, p. 55.

Niagaran (Guelph): New Hope, Ontario.

Trimerella borealis Whiteaves.

Trimerella borealis Whiteaves, Ottawa Nat., 16, 1902, p. 142, pl. 3, figs. 2, 3; Geol. Surv. Canada, Pal. Foss., 3, pt. 4, 1906, p. 250, pl. 25, figs. 3, 3a.

Niagaran: Ekwan River, Canada.

TRIMERELLA CONRADI Dall. See Dinobolus conradi.

Trimerella dalli Davidson and King.

Trimerella dalli Davidson and King, Quart. Jour. Geol. Soc. London, 30, 1874, p. 154, pl. 15, figs. 1-3.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pl. 4A, fig. 10.—Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 2, 1895, p. 56 (loc. occ.).

Niagaran (Guelph): Hespelar, Elora, and New Hope, Ontario.

Trimerella ekwanensis Whiteaves.

Trimerella Equanensis Whiteaves, Ottawa Nat., 16, 1902, p. 141, pl. 2, figs. 1, 2; pl. 3, fig. 1.

Trimerella Ekwanensis Whiteaves, Geol. Surv. Canada, Ann. Rep., n. s., 16, App. F, 1904, p. 41; ibid., Pal. Foss., 3, pt. 4, 1906, p. 249, pl. 24, fig. 7; pl. 25, figs. 1, 2.

Niagaran: Ekwan River, Canada.

TRIMERELLA GALTENSIS Davidson and King. See Rhinobolus galtensis.

Trimerella grandis Billings.

Trimerella grandis Billings, Pal. Fossils, 1, 1862, pp. 166, 167, fig. 151.—Dall, Amer. Jour. Conch., 2, 1870, p. 160; ibid., 7, 1871, p. 82.—Hall, 23d Rep. New York State Cab. Nat. Hist., 1873, pl. 13, figs. 11-16.—Davidson and King, Quart. Jour. Geol. Soc. London, 30, 1874, pl. 13, figs. 2, 3.—Nicholson, Pal. Prov. Ontario, 1875, p. 67, fig. 37.—Miller, N. A. Geol. Pal., 1889, p. 386, figs. 631, 632.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1221, figs.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pl. 4A, figs. 1, 2; pl. 4B, figs. 2-5.—Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 2, 1895, p. 53.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 192, fig. 226c, d.

Niagaran (Guelph): Galt, New Hope, Elora, and Hespelar, Ontario; near Hillsboro, Ohio; Wisconsin.

TRIMERELLA MINOR Dall. See Rhinobolus galtensis.

Trimerella ohioensis Meek.

Trimerella ohioensis Meek, Amer. Jour. Sci., 3d ser., 1, 1871, p. 305.—Dall, Amer. Jour. Conch., 7, 1871, p. 83.—Davidson and King, Geol. Mag., 9, 1872.—Meek, Pal. Ohio, 1, 1873, p. 183, pl. 16, fig. 1; Quart. Jour. Geol. Soc. London, 30, 1874, p. 153, pl. 16, figs. 3-7; pl. 19, figs. 1-2.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1222, figs.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, pl. 4A, figs. 3-9.—Whiteaves, Pal. Foss. Geol. Surv. Canada, 3, pt. 2, p. 54, pl. 10, figs. 1, 1a.—Grabau and Shimer, N. A. Index Fossils, 1, p. 191, figs. 226a, b.

Niagaran (Guelph): Genoa, Ottawa County, Ohio; Port Byron, Illinois; Elora, Ontario.

Holotype.—Cat. No. 7801, U.S.N.M.

TRIMERES Barrande. See Trimeroceras Hyatt.

TRIMEROCERAS Hyatt. Genotype: Gomphoceras staurostoma Barrande.
Trimorion Barrande, Syst. Sil. Boheme, 2, pt. 1, 1867, p. 265.
Trimeres Barrande, Syst. Sil. Boheme, 2, pt. 1, 1867, p. 265.
Trimeroceras Hyatt, Proc. Boston Soc. Nat. Hist., 22, 1883, p. 278.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 130.—Foord, Cat. Foss. Ceph. British Mus., 1, 1888, p. 245.

Trimeroceras gilberti Kindle and Breger.
Trimeroceras gilberti Kindle and Breger, 28th Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1904, p. 475, pl. 15, fig. 1.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 130.
Niagaran: Huntington and Delphi, Indiana.
Holotype.—Cat. No. 52950, U.S.N.M.

TRIMEROCYSTIS Schuchert. Genotype: T. peculiaris Schuchert.
Trimerocystis Schuchert, Smiths. Misc. Coll., 47, 1904, p. 237.

Trimerocystis pecularis Schuchert.
Trimerocystis pecularis Schuchert, Smiths. Misc. Coll., 47, pt. 2, 1904, p. 239, fig. 34, pl. 35, figs. 1–3; Maryland Geol. Surv., Low. Dev., 1913, p. 244, pl. 34, figs. 8–10.
Helderbergian (Keyser): Keyser, West Virginia.
Holotype.—Cat. No. 35064, U.S.N.M.

TRIMERUS Green. See Homalonotus Koenig.

TRIMORION Barrande. See Trimeroceras Hyatt.

TRINUCLEUS Murchison. See Cryptolithus Green.

TRINUCLEUS CARACTACI Emmons. See Cryptolithus tessellatus.

TRINUCLEUS CONCENTRICA of authors. See Cryptolithus tessellatus.

TRIPLECIA Hall. Genotype: Atrypa extans Emmons.
Triplesia Hall, Pal. New York, 3, 1859, p. 522; 12th Rep. New York State Cab. Nat. Hist., 1859, p. 44.—Davidson, Mon. British Sil. Brach., Pal. Soc., 1869, p. 197.—Zittel, Handb. Pal., 1, 1880, p. 692.—Davidson, Mon. British Foss. Brach., 5, Sil. Suppl., Pal. Soc., 1883, p. 141.—Waagen, Pal. Indica, 13th ser., 1, 1884, p. 576.—Miller, N. A. Geol. Pal., 1889, p. 387.—Koken, Die Leitfossilien, Leipzig, 1896, p. 235.—Schuchert, Zittel-Eastman Textb. Pal., 1913, p. 387.
Triplecia Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 269.—Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 408.—Hall and Clarke, 11th Ann. Rep. New York State Geol., 1894, p. 289.—Schuchert, Zittel-Eastman Textb. Pal., 1, 1900, p. 315.
Dicraniscus Meek, Amer. Jour. Sci., 3d ser., 4, 1872, p. 279; Pal. Ohio, 1, 1873, p. 576. (Genotype: D. ortoni Meek.)
Cliftonia new subgenus of Triplecia Foerste, Bull. Sci. Lab. Denison Univ., 14, 1909, p. 82.—Schuchert, Zittel-Eastman Textb. Pal., 1913, p. 387. (Genotype: C. striata Foerste.)
Oxoplecia Wilson, Bull. Victoria Mem. Mus., 1, 1913, p. 81. (Genotype: O. calhouni Wilson.)

TRIPLECIA? CALCIFERA Hall and Clarke. See Syntrophia calcifera.

Triplecia (Cliftonia) calhouni (Wilson).
Oxoplecia calhouni Wilson, Bull. Victoria Mem. Mus., 1, 1913, p. 82, fig. 4, and pl. 8.
Trenton (Collingwood): Ottawa, Ontario.

Triplecia cuspidata (Hall.)
Atrypa cuspidata Hall, Pal. New York, 1, 1847, p. 138, pl. 33*, fig. 1, and p. 318.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 190.
Triplesia cuspidata Hall, Pal. New York, 3, 1859, p. 522.—Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 270.
Trenton: Lowville, New York.

Triplecia extans (Emmons).
Atrypa extans Emmons, Geol. New York, Rep. 2d Dist., 1842, p. 395, fig. 6.—Hall, Pal. New York, 1, 1847, p. 137, pl. 33, fig. 1.—Owen, Amer. Jour. Sci. Arts, 47, 1844, p. 369, fig. 6.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 189, pl. 10, figs. 1, 11; Man. Geol., 1860, p. 99, fig. 88.
Triplecia extans Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 270, pl. 11C, figs. 1-7.—Raymond, Bull. Amer. Pal., 3, 1902, p. 304, pl. 19, fig. 4.
Triplesia extans Hall, Pal. New York, 3, 1859, p. 523, figs. 1-3.—Miller, N. A. Geol. Pal., 1889, p. 387, fig. 634.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1225, figs.
Camarella extans Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 112, figs.
Trenton: Watertown, Lowville, and Boonville, New York.

Triplecia insularis anticostiensis Twenhofel.
Orthis insularis Davidson, Mon. British Foss. Brach., 3, pt. 7, 1871, p. 273, pl. 37, figs. 8-15.
Triplecia ortoni Schuchert and Twenhofel, Bull. Geol. Soc. Amer., 21, 1910, p. 710.
Triplecia insularis anticostiensis Twenhofel, Bull. Victoria Mem. Mus., 3, 1914, p. 26.
Anticostian (Gun River, Jupiter River): Jupiter River, Anticosti.

Triplecia niagarensis Hall and Clarke.
Triplecia niagarensis Hall and Clarke, Pal. New York, 8, pt. 2, 1895, pl. 83, figs. 16-20; 48th Rep. New York State Mus., 2, for 1895, 1897, p. 351, pl. 7, figs. 1-4; 14th Rep. State Geol. New York for 1894, 1897, p. 351, pl. 7, figs. 1-4.
Niagaran (Racine?): Near Milwaukee, Wisconsin.

Triplecia nucleus (Hall).
Atrypa nucleus Hall, Pal. New York, 1, 1847, p. 138, pl. 33, fig. 2.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 189, pl. 10, fig. 2.
Triplesia nucleus Hall, Pal. New York, 3, 1859, p. 522.
Triplecia nucleus, Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 270, pl. 11C, figs. 8, 9.—Ruedemann, Bull. New York State Mus., 49, for 1901, 1902, p. 24.
Camarella nucleus Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 112, figs.
Trenton: Middleville and Rysedorph Hill (Rysedorph), New York.

Triplecia ortoni (Meek).
Dicraniscus ortoni Meek, Amer. Jour. Sci., 3d ser., 4, 1872, p. 280.
Triplecia ortoni, Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 270; pl. 11C, figs. 12-20.—Foerste, Geol. Ohio, 7, 1895, p. 585.

Triplecia ortoni—Continued.
Triplesia ortoni Meek, Pal. Ohio, 1, 1873, p. 178, pl. 15, fig. 1.—Davidson, Mon. British Foss. Brach., 5, Sil. Suppl., Pal. Soc., 1883, p. 142, fig.—Miller, N. A. Geol. Pal., 1889, p. 387, fig. 635.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 1226, fig.—Foerste, Jour. Geol., 11, 1903, p. 707 (loc. occ.).
Upper Medinan (Brassfield): Dayton, etc., Ohio; Indiana; Kentucky; Tennessee.

Triplecia(?) radiata Whitfield.
Triplesia radiata Whitfield, Bull. American Mus. Nat. Hist., 2, 1889, p. 43, pl. 7, figs. 5-8.—Lesley, Geol. Surv. Pennsylvania, Rep., P 4, 1890, p. 1225, figs.
Triplecia radiata, Hall and Clarke, Pal. New York, 8, pt. 1, 1892, p. 271.
Canadian (Beekmantown): Beekmantown, New York.

Triplecia (Cliftonia) striata Foerste.
Triplecia (Cliftonia) striata Foerste, Bull. Sci. Lab. Denison Univ., 14, 1909, p. 81, pl. 3, fig. 42A, B.
Upper Medinan (Brassfield): Near Clifton, Tennessee.

Triplecia (Cliftonia) tenax Foerste.
Triplecia (Cliftonia) tenax Foerste, Bull. Sci. Lab. Denison Univ., 14, 1909, p. 82, pl. 3, fig. 39; pl. 4, fig. 70A, B.
Clinton (Osgood): Clifton, Tennessee.

Triplecia (California) ulrichi Winchell and Schuchert.
Triplecia ulrichi Winchell and Schuchert, Geol. Minnesota, 3, 1893, pl 409, fig. 34.
Richmond (Maquoketa): Wykoff and Spring Valley, Minnesota.
Cotypes.—Cat. No. 45545, U.S.N.M.

TRIPLESIA Hall and Clarke. See Triplecia Hall.

TRIPLESIA? AMBIGUA Hall. See Camarella ambigua.

TRIPLESIA CALCIFERA Walcott. See Syntrophia nundina.

TRIPLESIA? congesta Hall. See Hyattidina congesta.

TRIPLESIA LATERALIS Whitfield. See Syntrophia lateralis.

TRIPLESIA PUTILLUS Hall. See Mimulus waldronensis.

TRIPLESIA? QUADRICOSTATA Hall. See Hyattidina congesta.

TRIPLEUROCERAS Hyatt. Genotype: Orthoceras archiaci Barrande.
Tripleuroceras Hyatt, Proc. Boston Soc. Nat. Hist., 22, 1883, p. 289.
Tripleuroceroceras Hyatt, Zittel-Eastman Textb. Pal., 1900, p. 529.

Tripleuroceras robsoni Whiteaves.
Tripleuroceras Robsoni Whiteaves, Geol. Surv. Canada, Pal. Foss., 3, pt. 4, 1906, p. 281, pls. 31, 32.—Ottawa Nat., 12, 1898, p. 123.
Niagaran: Stonewall, Manitoba.

TRIPTEROCERAS Hyatt. Genotype: Orthoceras hastatum Billings.
Tripteroceras Hyatt, Proc. Boston Soc. Nat. Hist., 22, 1884, p. 287.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 103.
Trypteroceras Zittel, Handb. Pal., 2, 1884, p. 370.
Triptoceras Miller, N. A. Geol. Pal., 2d App., 1897, p. 778.—Clarke, Geol. Minnesota, 3, pt. 2, 1897, p. 791.

Tripteroceras hastatum (Billings).
Orthoceras hastatum Billings, Geol. Surv. Canada, Rep. Progr. for 1853–56, 1857, p. 333.
Tripteroceras hastatum Hyatt, Proc. Boston Soc. Nat. Sci., 22, 1884, p. 287.
Black River (Leray): Pauquettes Rapids, Ottawa River, Canada.

Tripteroceras lambi (Whiteaves).
Gonioceras lambi Whiteaves, Trans. Royal Soc. Canada, 9, sec. 4, 1891, p. 86, pl. 11, figs. 1a–b.
Triptoceras lambi Clarke, Geol. Minnesota, 3, pt. 2, 1897, p. 793, pl. 56, figs. 1 and 2.
Tripteroceras lambii Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 3, 1897, p. 213.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 105, fig. 1332.
Black River or Richmond: East Selkirk, Manitoba; Stewartville, Minnesota (?Trenton).

Tripteroceras oweni (Clarke).
Triptoceras oweni Clarke, Geol. Minnesota, 3, pt. 2, 1897, p. 792, pl. 56, figs. 5–7.
Tripteroceras oweni Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 104, fig. 1330.
Black River (Platteville): Cannon Falls, Minnesota.

Tripteroceras planoconvexum (Hall).
Orthoceras planoconvexum Hall, Rep. Supt. Geol. Surv. Wisconsin, 1861, p. 47.—Whitfield, Geol. Wisconsin, 4, 1882, p. 228, pl. 7, fig. 14; Mem. Amer. Nat. Hist., 1, pt. 2, 1895, p. 72, pl. 8, figs. 24, 25; pl. 9, figs. 1, 2.
Triptoceras planoconvexum Clarke, Geol. Minnesota, 3, pt. 2, 1897, p. 791, pl. 56, fig. 3; pl. 57, fig. 1.
Tripteroceras planoconvexum Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 103, fig. 1329.
Black River: Beloit and Mineral Point, Wisconsin; Cannon Falls, Minnesota Platteville); Lincoln County, Missouri (Auburn).
Trenton (Prosser): Hader and Wykoff, Minnesota.

Tripteroceras planodorsatum (Whitfield).
Cyrtoceras planodorsatum Whitfield, Geol. Wisconsin, 4, 1882, p. 231, pl. 7, figs. 10–12.—Chamberlin, ibid., 1883, p. 159, fig.
Triptoceras planodorsatum Clarke, Geol. Minnesota, 3, pt. 2, 1897, p. 792, pl. 56, fig. 4; pl. 57, figs. 2–4.
Tripteroceras planodorsatum Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 104, fig. 1331.
Black River (Platteville): Near Beloit, Wisconsin; Minneapolis, Minnesota.
Plesiotype.—Cat. No. 46529, U.S.N.M.

TRIPTEROCERAS SEMIPLANATUM Whiteaves. See Jovellania semiplanata.

Tripteroceras servile (Billings).
Orthoceras servile Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 252.
Triptoceras servile Clarke, Geol. Minnesota, 3, pt. 2, 1897, p. 793 (gen. ref.).
Chazyan (Quebec—L): Point Rich, Newfoundland.

Tripteroceras xiphias (Billings).
Orthoceras xiphias Billings, Geol. Surv. Canada, Rep. Progr. for 1853–56, 1857, p. 318; Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 22 (loc. ref.).
Triptoceras xiphias Clarke, Geol. Minnesota, 3, pt. 2, 1897, p. 793 (gen. ref.).
Trenton: Ottawa, Ontario.
Richmond (English Head): Cliffs east of English Head, Anticosti.

TRIPTOCERAS Miller. See Tripteroceras Hyatt.

TROCHOCERAS Barrande. Genotype: T. davidsoni Barrande.

Trochoceras Barrande, Haidinger's Berichte, Wien, 1847, p. 266; Neues Jahrb. Min., Geol., Pal., 1853, p. 343; ibid., 1854, p. 8.—Pictet, Traite de Pal., 2d ed., 2, 1854, p. 640.—Barrande, Neues Jahrb. Min., Geol., Pal., 1855, p. 259, pl. 3, fig. 18; Bull. Soc. Geol. France, 2d ser., 12, 1855, p. 159, pl. 5, figs. 9, 10; Syst. Sil. Boheme, 2, pt. 1, 1867, p. 74.—Hyatt, Proc. Amer. Phil. Soc., 32, 1894, p. 502.—Foord, Cat. Foss. Ceph. British Mus., 2, 1891, p. 14.—Zittel, Handb. Pal., 2, 1885, p. 384.—Clarke and Ruedemann, Mem. New York State Mus., 5, 1903, p. 102.

Sphyradoceras Hyatt, Boston Soc. Nat. Hist., 22, 1883, p. 298.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 74 (Genotype: Trochoceras clio Hall).

TROCHOCERAS Hall. See Mitroceras Hyatt.

Trochoceras aeneas Hall.

Trochoceras aeneas Hall, 20th Rep. New York State Cab. Nat. Hist., rev. ed., 1868, 1870, footnote expl. of pl. 25, fig. 16.

Niagaran: Lyons, Iowa.

TROCHOCERAS AMERICANUM Foord. See Gyroceras americanum.

Trochoceras anderdonense Grabau.

Trochoceras anderdonense Grabau, Michigan Geol. Surv., Geol., 1st ser., 1909, p. 200, pl. 28, fig. 9; pl. 29, figs. 5, 6.

Upper Monroan (Amherstburg): Detroit River, opposite Amherstburg, Ontario.

TROCHOCERAS BAERI Meek and Worthen. See Gyroceras baeri.

TROCHOCERAS (GYROCERAS) BANNISTERI Hall. See Gyroceras bannisteri.

Trochoceras boreale Foord.

Trochoceras boreale Foord, Cat. Foss. Ceph. British Mus., 2, 1891, p. 23.—Ami, Canadian Rec. Sci., 4, 1891, p. 399.

Niagaran: Wellington Channel, Arctic America.

Trochoceras costatum (Hall).

Trochoceras costatum Hall, Geol. Surv. Wisconsin, Rep. Prog. for 1860, 1861, p. 61; Trans. Albany Inst., 4, 1863, p. 288; 20th Rep. New York State Cab. Nat. Hist., 1868, p. 360, pl. 16, figs. 1, 2; rev. ed., 1870, p. 402, pl. 25, fig. 15.—Chamberlin, Geol. Wisconsin, 1, 1883, p. 194, fig.—Clarke and Ruedemann, Mem. New York State Mus., 5, 1903, p. 103, pl. 20, figs. 1, 2.

Sphyradoceras costatum Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 74. fig. 1287.

Niagaran: Racine and near Milwaukee, Wisconsin (Racine); Shelby, New York (Guelph).

Trochoceras desplainense McChesney.

Trochoceras desplainensis McChesney, Desc. New Species Fossils, 1860, p. 68; pls., 1865, pl. 8, fig. 2; Trans. Chicago Acad. Sci., 1, 1868, p. 52, pl. 8, fig. 1.—Hall, 20th Rep. New York State Cab. Nat. Hist., 1868, p. 359, pl. 16, figs. 8-10; rev. ed., 1870, p. 401, pl. 16, figs. 8-10.—Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 1, 1884, p. 36, pl. 5, fig. 5.—Newell, Proc. Boston Soc. Nat. Hist., 23, 1888, p. 486.—Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 2, 1895, p. 105.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 1228, fig.—Clarke and Ruedemann, Mem. New York State Mus., 5, 1903, p. 100, pl. 20, fig. 3-9.

Trochoceras desplainense—Continued.

Trochoceras (Sphyradoceras) cf. desplainense Kindle and Breger, 28th Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1904, p. 472.

Sphyradoceras desplainense Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 74, fig. 1286.

Niagaran: Joliet, etc., Illinois; Wisconsin (Racine); Shelby and Rochester, New York; Ontario; Wisconsin (Guelph); Huntington, Indiana.

TROCHOCERAS GEBHARDII Hall. See Mitroceras gebhardi.

TROCHOCERAS HALLI Foord. See Plectoceras halli.

Trochoceras? incipiens Barrande.

Trochoceras incipiens Barrande, Syst. Sil. du Boheme, 4me ser., 2, 1870, pl. 433, figs. 5–9.

Lower Ordovician: Newfoundland.

Trochoceras insigne Whiteaves.

Trochoceras insigne Whiteaves, Geol. Surv. Canada Pal. Foss., 3, pt. 4, 1906, p. 282, pl. 41; Ottawa Nat., 12, 1898, p. 124.

Niagaran: Stonewall, Manitoba.

Trochoceras mccharlesi Whiteaves.

Trochoceras McCharlesii Whiteaves, Trans. Roy. Soc. Canada, 7, sec. 4, 1889, p. 81, pl. 16; Pal. Foss., Geol. Surv. Canada, 3, pt. 3, 1897, p. 228.

Black River or Richmond: East Selkirk, Manitoba.

Trochoceras notum Hall.

Trochoceras notum Hall, 20th Rep. New York State Cab. Nat. Hist., 1868, p. 360; rev. ed., 1870, p. 403, pl. 16, figs. 1, 2.

Niagaran (Racine): Bridgeport, Illinois.

Trochoceras turbinatum Hall.

Trochoceras turbinata Hall, Pal. New York, 2, 1852, p. 336, pl. 77, fig. 1.

Cayugan (Cobleskill): Schoharie, New York.

Trochoceras waldronense Hall.

Trochoceras Waldronense Hall, 28th Rep. New York State Mus. Nat. Hist., doc. ed., 1877, pl. 27, figs. 13–15; mus. ed., 1879, p. 179, pl. 27, figs. 13–15; 11th Ann. Rep. Indiana Dep. Geol. Nat. Hist., 1882, p. 326, pl. 28, figs. 13–15.—Miller, N. A. Geol. Pal., 1889, p. 455, fig. 763.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 1229, figs.

Niagaran (Waldron): Waldron, Indiana.

TROCHOCRINITES Portlock. See Periechocrinus Austin.

TROCHOLITES Conrad. Genotype: T. ammonius Conrad.

Trocholites Conrad, 2d Ann. Rep. New York Geol. Surv., 1838, p. 118; Jour. Acad. Nat. Sci. Philadelphia, 8, 1842, p. 274.—Hall, Pal. New York, 1, 1847, p. 192.—D'Orbigny, Prodr. de Pal., 1, 1849, p. 5.—McCoy, British Pal. Rocks Fossils, 1854, p. 323.—Pictet, Traite de Pal., 2d ed., 2, 1854, p. 647.—Emmons, Amer. Geol., 1, pt. 2, 1855, p. 146.—Hitchcock, Geol. Vermont, 1, 1861, 1862, p. 297.—Angelin, Fragmenta Silurica, 1880, p. 10.—Remele, Zeits. d. d. geol. Gesell., 32, 1880, p. 642, footnote; ibid., 33, 1881, p. 4, p. 12.—Hyatt, Proc. Boston Soc. Nat. Hist., 22, 1884, p. 267.—Zittel, Handb. Pal., 2, 1884, p. 377.—Holm, Palaeont. Abhandl., Dames and Kayser, 3, Heft 1, 1885, p. 9.—Miller, N. A. Geol. Pal., 1889, p. 456.—Schröder, Pal. Abhandl.

TROCHOLITES—Continued.

von Dames u. Kayser, Neue Folge, 1, Heft 4, Jena, 1891, p. 5.—Foord, Cat. Foss. Ceph. British Mus., 2, 1891, p. 43.—Hyatt, Proc. Amer. Phil. Soc., 32, 1894, p. 482.—Koken, Die Leitfossilien, Leipzig, 1896, p. 50, fig. 36, figs. 1, 1a.—Whiteaves, Ottawa Nat., 18, 1904, p. 13.—Ruedemann, Bull. New York State Mus., 90, 1906, p. 478.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 71.

Palæoclymenia Remele, Zeits. d. d. geol. Gesell., 33, 1881, pp. 12, 13.—Foord, Cat. Foss. Ceph. British Mus., 2, p. 44.—Schröder, Pal. Abhandl. von Dames u. Kayser, Neue Folge, 1, Heft 4, Jena, 1891, p. 6. (Genotype: Trocholites planorbiformis Conrad.)

Palæonautilus Remele, Zeits. d. d. geol. Gesell., 32, 1881, p. 640.—Schröder, Pal. Abhandl. von Dames u. Kayser, Neue Folge, 1, Heft 4, Jena, 1891, p. 6. (Genotype: Trocholites planorbiformis Hall, not Conrad.)

Trocholites ammonius Conrad.

Trocholites ammonius Conrad, 2d Ann. Rep. New York Geol. Surv., 1838, p. 119.—Emmons, Geol. New York, 2, 1842, p. 279, fig. 3; p. 392, fig. 1; 3, 1842, p. 55.—Owen, Amer. Jour. Sci. Arts, 47, 1844, p. 369, fig. 1 on p. 365.—Hall, Pal. New York, 1, p. 192, pl. 40A, figs. 4a–k; p. 309, pl. 84, figs. 2a–c.—Emmons, Amer. Geol., 1, pt. 2, 1855, p. 146, fig. 29, pl. 12, figs. 13, 14a–d, 15a–c.—Emmons, Man. Geol., 1860, p. 96, fig. 85.—Lincklaen, 14th Rep. New York State Cab. Nat. Hist., 1861, p. 47, pl. 2, fig. 1.—Hitchcock, Geol. Vermont, 1, 1861, 1862, p. 297, fig. 207.—Remele, Zeits. d. d. geol. Gesell., 33, 1881, pp. 4, 11.—Ami, Canadian Rec. Sci., 3, 1888, p. 105.—Miller, N. A. Geol. Pal., 1889, p. 456, fig. 764.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1229, figs.—Foord, Cat. Foss. Ceph. British Mus., 1891, pl. 2, p. 47.—Hyatt, Proc. Amer. Phil. Soc., 32, 1894, p. 487.—Whiteaves, Ottawa Nat., 18, 1904, p. 14.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 71, fig. 1282.

Lituites ammonius James, Jour. Cincinnati Soc. Nat. Hist., 8, 1886, p. 249.

Trocholithus uticus Vanuxem, Geol. New York, 3, 1842, p. 57, fig. 3.

Trenton: Newport, Middleville, Canajoharie, etc., New York; West Covington, Kentucky.

Trocholites canadensis Hyatt.

Trocholites planorbiformis Foord, Cat. Foss. Ceph. British Mus., pt. 2, 1891, p. 48.

Palæonautilus planorbiformis Remele, Zeits. d. d. geol. Gesell., 33, 1881, p. 13.

Trocholites canadensis Hyatt, Proc. Amer. Phil. Soc. 32, 1894, p. 486, pl. 4, figs. 23, 24; pl. 6, figs. 39, 40.—Whiteaves, Ottawa Nat., 18, 1904, p. 16.

Trenton: Falls of Montmorency, near Quebec, Canada.

Trocholites circularis Miller and Dyer.

Trocholites circularis Miller and Dyer, Cont. to Pal., 2, 1878, p. 9, pl. 3, fig. 10.—Miller, N. A. Geol. Pal., 1889, p. 456, fig. 765.

Lituites circularis James, J. F., Jour. Cincinnati Soc. Nat. Hist., 8, 1886, p. 248.

Maysville: Near Morrow, Ohio.

Trocholites dyeri Hyatt.

Trocholites dyeri Hyatt, Proc. Amer. Phil. Soc., 32, 1894, p. 489.

Cincinnatian: Cincinnati, Ohio.

Trocholites internistriatus (Whitfield).

Lituites internistriatus Whitfield, Bull. Amer. Mus. Nat. Hist., 1, 1886, p. 332, pl. 29, figs. 5–8.

Trocholites internistriatus—Continued.

Trocholites internistriatus Hyatt, Amer. Phil. Soc. Proc., 32, 1894, p. 485, pl. 4, fig. 25.—Ruedemann, Bull. New York State Mus., 90, 1906, p. 479, pl. 24, fig. 2, fig. 38.

Discoceras internestriatum Schroder, Pal. Abhandl. von Dames und Kayser, Neue Folge, 1, Heft 4, 1891, p. 23.

Canadian (Beekmantown): Fort Cassin, Vermont.

Trocholites minusculus Miller and Dyer.

Trocholites minusculus Miller and Dyer, Contr. to Pal., 2, 1878, p. 9, pl. 3, fig. 11.—Hyatt, Proc. Amer. Phil. Soc., 32, 1894, p. 490.

Eden (Southgate): Cincinnati, Ohio.

TROCHOLITES MULTICOSTATUS Whiteaves. See Discoceras graftonense.

Trocholites planorbiformis Conrad.

Trocholites planorbiformis Conrad, Jour. Acad. Nat. Sci. Philadelphia, 8, 1842, p. 274, pl. 17, fig. 1.—Hall, Pal. New York, 1, 1847, p. 310, pl. 84, figs. 3a–f.—McCoy, British Pal. Rocks and Foss., 1854, p. 324.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 147.—Ami, Canadian Rec. Sci., 4, 1891, p. 399.—Whiteaves, Ottawa Nat., 18, 1904, p. 15.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 72, fig. 1283.

Lituites planorbiformis James, Jour. Cincinnati Soc. Nat. Hist., 8, 1886, p. 247.

Cincinnatian (Pulaski): Near Grimsby, Ontario; Pulaski, New York.

TROCHOLITES PLANORBIFORMIS Foord. See Trocholites canadensis.

TROCHOLITES UNDATUS Hyatt. See Plectoceras? undatus.

TROCHOLITHUS UTICUS Vanuxem. See Trocholites ammonius.

TROCHOLITOCERAS Hyatt. Genotype: T. walcotti Hyatt.

Trocholitoceras Hyatt, Amer. Phil. Soc. Proc., 32, 1894, p. 480.—Miller, N. A. Geol. Pal., 2d App., 1897, p. 778.—Ruedemann, Bull. New York State Mus., 90, 1906, p. 478.

Trocholitoceras walcotti Hyatt.

Trocholitoceras walcotti Hyatt, Amer. Phil. Soc. Proc., 32, 1894, p. 480, pl. 6, figs. 12–20.—Ruedemann, Bull. New York State Mus., 90, 1906, p. 478, fig. 37.

Canadian (Beekmantown): Fort Cassin, Vermont.

Holotype.—Cat. No. 25659, U.S.N.M.

TROCHONEMA Salter. Genotype: Pleurotomaria umbilicatum Hall.

Trochonema Salter, Geol. Surv. Canada, Can. Org. Rem., dec. 1, 1859, p. 24, 27.—Lindstrom, Kongl. Sven. Vet.-Akad. Handl., 19, No. 6, 1881, pp. 155–180.—Zittel, Handb. Pal., 2, 1882, p. 196.—Nettelroth, Kentucky, Foss. Shells, Geol. Surv. Kentucky, 1889, p. 189.—Miller, N. A. Geol. Pal., 1889, p. 428.—Koken, Bull. de l'Acad. Imp. Sci. St. Petersburg, 7, 1897, p. 187.—Ulrich and Scofield, Geol. Minnesota Pal., 3, pt. 2, 1897, pp. 1045, 1046.—Koken, Neues Jahrb. Min., Geol., Pal., 1, 1898, p. 24.—Pilsbry, Zittel-Eastman Textb. Pal., 1, 1900, p. 449.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Hist. Surv. Indiana, 1908, p. 952.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 669.

Trochonemopsis Meek, Proc. Acad. Nat. Sci. Philadelphia, 1871, p. 83; Geol. Surv. Ohio, Pal., 1, 1873, p. 219.

TROCHONEMA—Continued.

Eunema Salter, Geol. Surv. Canada, Can. Org. Rem., dec. 1, 1859, pp. 24, 29.—Lindstrom, Kongl. Sven. Vet. Akad. Handl., 19, No. 6, 1881, p. 155.—Zittel, Handb. Pal., 2, Munich, 1882, p. 189.—Koken, Neues Jahrb. Min., Geol., Pal., 1889, p. 424.—Miller, N. A. Geol. Pal., 1889, p. 403.—Koken, Die Leitfossilien, Leipzig, 1896, p. 118, fig. 98; Neues Jahrb. Min., Geol., Pal., 1, 1898, p. 24; Bull. Acad. Imp. Sci. St. Petersburg, 7, 1897, p. 188.—Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, pp. 1046–1052.—Pilsbry, Zittel-Eastman Textb. Pal., 1, 1900, p. 449.—Dall, ibid., 2d ed., 1913, p. 530. (Genotype: E. strigillatum Salter.)

Trochonema (Eunema) altisulcatum (Hudson).

Eunema altisulcatum Hudson, Bull. New York State Mus., 80, 1905, p. 291, pl. 5, fig. 3.—Raymond, Ann. Carnegie Mus., 4, 1908, p. 208.

Chazyan (Valcour): Valcour Island, New York.

Trochonema altum Ulrich and Scofield.

Trochonema altum Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 1052, pl. 77, figs. 39–41.

Trenton (Prosser): Near Cannon Falls, Minnesota.

Holotype.—Cat. No. 46021, U.S.N.M.

Trochonema (Eunema) arctatum Ulrich.

Trochonema (Eunema) arctatum Ulrich, Geol. Minnesota, 3, pt. 2, 1897, p. 1054, pl. 76, figs. 9, 10.

Trenton (Flanagan): Near Burgin, Kentucky.

Holotype.—Cat. No. 46022, U.S.N.M.

Trochonema beachi Whitfield.

Trochonema beachi Whitfield, Ann. Rep. Geol. Surv. Wisconsin, 1878, p. 74; Geol. Wisconsin, 4, 1882, p. 213, pl. 6, fig. 6.—Chamberlin, ibid., 1, 1883, p. 157.—Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 1048, pl. 77, figs. 9–12.

Black River (Platteville): Beloit and Janesville, Wisconsin; Dixon, Illinois; Minneapolis, Minnesota.

Plesiotypes.—Cat. Nos. 46023–46025, U.S.N.M.

Trochonema bellulum Ulrich.

Trochonema bellulum Ulrich, Geol. Minnesota, 3, pt. 2, 1897, p. 1050, pl. 77, figs. 26–29.

Stones River (Murfreesboro): Murfreesboro, Tennessee.

Holotype.—Cat. No. 46076, U.S.N.M.

Trochonema beloitense Whitfield.

Trochonema beloitense Whitfield, Ann. Rep. Geol. Surv. Wisconsin, 1878, p. 74; Geol. Wisconsin, 4, 1882, p. 212, pl. 6, figs. 7, 8.—Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 1048, pl. 78, figs. 1–9.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 670, fig. 927.

Black River (Platteville): Beloit and Mineral Point, Wisconsin; Dixon, Illinois; Minneapolis, etc., Minnesota.

Plesiotypes.—Cat. Nos. 48011, 48012, U.S.N.M.

Trochonema biangulatum (Hall).

Pleurotomaria biangulata Hall, Pal. New York, 1, 1847, p. 31, pl. 6, figs. 6a, 6b.

Trochonema biangulatum Raymond, Ann. Carnegie Mus., 4, 1908, p. 205, pl. 53, figs. 9, 10.

Chazyan (Day Point): Valcour Island, New York.

Trochonema (Eunema) cerithioides (Salter).

Eunema cerithioides Salter, Geol. Surv. Canada, Org. Rem., dec. 1, p. 30.—Billings, ibid., Geol. Canada, 1863, p. 145, fig. 89a, b.; ibid., Pal. Fossils, 1, 1865, p. 35, fig. 36 (adv. sheets, 1862).—Miller, N. A. Geol. Pal., 1889, p. 403, fig. 674.

Black River (Leray): Pauquettes Rapids, Ottawa River, Canada.

Trochonema? (Eunema) clivosa (Sardeson).

Pleurotomaria clivosa Sardeson, Bull. Minnesota Acad. Nat. Sci., 3, 1892, p. 337, pl. 6, fig. 9.

Trochonema? (Eunema) clivosa Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 1054 (gen. ref.).

Black River (Decorah): Minneapolis, Minnesota.

Trochonema dispar Raymond.

Trochonema dispar Raymond, Amer. Jour. Sci., 4th ser., 20, 1905, p. 378; Ann. Carnegie Mus., 4, pl. 53, figs. 7, 8.

Chazyan (Crown Point, Valcour): Valcour Island and Chazy, New York.

TROCHONEMA (GYRONEMA) DUPLICATUM Grabau and Shimer. See Gyronema duplicatum.

Trochonema eccentricum Ulrich.

Trochonema eccentricum Ulrich, Geol. Minnesota, 3, pt. 2, 1897, p. 1049, pl. 77, figs. 17, 18.—Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 3, 1897, p. 198.

Stones River (Lebanon): Near Lebanon, Tennessee.

?Trenton: Reindeer Island, Lake Winnipeg.

Holotype.—Cat. No. 46077, U.S.N.M.

Trochonema (Eunema) epitome (Hudson).

Eunema epitome Hudson, Bull. New York State Mus., 80, 1905, p. 290, pl. 4, figs. 6, 7.—Raymond, Ann. Carnegie Mus., 4, 1908, p. 208.

Chazyan (Valcour): Valcour Island, New York.

Trochonema (Eunema) erigone (Billings).

Eunema Erigone Billings, Geol. Surv. Canada, Pal. Fossils, 1, 1865, p. 35, fig. 37 (adv. sheets, 1862); ibid., Geol. Canada, 1863, p. 180, fig. 171.

Black River: Near L'Original, Canada.

Trochonema exile Whitfield.

Trochonema exile Whitfield, Bull. Amer. Mus. Nat. Hist., 2, 1889, p. 57, pl. 9, figs. 1, 2.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1230, figs.—Sardeson, Jour. Geol., 11, 1903, p. 481, fig. 22.

Canadian (Beekmantown): Beekmantown, New York.

Trochonema fatuum (Hall).

Trochonema (Eunema) fatua Hall, 20th Rep. New York State Cab. Hist., 1868, p. 345, pl. 15 (6), figs. 7, 8; rev. ed., 1870, p. 394, pl. 15, figs. 7, 8.

Trochonema fatua Nettelroth, Kentucky Foss. Shells, Geol. Surv. Kentucky, 1889, p. 189.

Trochonema cf. fatuum Clarke and Ruedemann, Mem. New York State Mus., 5, 1903, p. 75, pl. 10, fig. 5.

Niagaran: Racine and Greenfield, Wisconsin (Racine); Shelby, New York (Guelph); Louisville, Kentucky (Louisville).

Trochonema fragile Ulrich and Scofield.

Trochonema fragile Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 1050, pl. 77, figs. 13–16.

Trenton (Prosser): Goodhue County, Minnesota; Carroll County, Illinois.

Cotypes.—Cat. Nos. 46028, 46029, U.S.N.M.

TROCHONEMA HALEI Miller. See Euomphalopterus halei.

Trochonema hudsoni Raymond.

Holopea hudsoni Raymond, Amer. Jour. Sci., 4th ser., 20, 1905, p. 378.

Trochonema hudsoni Raymond, Ann. Carnegie Mus., 4, 1908, p. 207, pl. 54, figs. 1-3.

Chazyan (Crown Point): Crown Point, Valcour Island, and Chazy, New York.

TROCHONEMA INORNATUM Whiteaves. See Euomphalus inornatus.

TROCHONEMA KNOXVILLENSIS Miller. See Lophospira(?) knoxvillensis.

TROCHONEMA (GYRONEMA) LIRATUM Grabau. See Gyronema liratum.

Trochonema madisonense Ulrich.

Trochonema madisonense Ulrich, Geol. Minnesota, 3, pt. 2, 1897, p. 1051, pl. 77, figs. 23-25.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 976, pl. 42, figs. 1-1b.

Richmond (Whitewater-Saluda): Madison, Indiana.

Holotype.—Cat. No. 46030, U.S.N.M.

Trochonema nanum Foerste.

Trochonema nana Foerste, Bull. Sci. Lab. Denison Univ., 1, 1885, p. 94, pl. 14, fig. 16.

Upper Medinan (Brassfield): Huffman's quarry, near Dayton, Ohio.

Trochonema niota (Hall).

Pleurotomaria niota Hall, Geol. Surv. Wisconsin, Rep. Prog., 1861, p. 33.—Whitfield, Mem. Amer. Mus. Nat. Hist., 1, pt. 2, 1895, p. 60, pl. 7, fig. 11.

Trochonema niota Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 1052, pl. 76, figs. 16-18.—Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 3, 1897, p. 198.

Black River (Platteville): Beloit, Wisconsin; ?Lake Winnipeg, Canada.

Plesiotype.—Cat. No. 46031, U.S.N.M.

Trochonema (Eunema) nitidum Ulrich.

Trochonema (Eunema) nitidum Ulrich, Geol. Minnesota, 3, 1897, p. 1053, pl. 77, figs. 44, 45.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 670, figs. 928c, d.

Eden (Southgate): Cincinnati, Ohio, and vicinity.

Holotype.—Cat. No. 46032, U.S.N.M.

TROCHONEMA NOTABILE Miller. See Lophospira(?) notabilis.

Trochonema (Eunema) obsoletum Ulrich.

Trochonema (Eunema) obsoletum Ulrich, Geol. Minnesota, 3, pt. 2, 1897, p. 1054, pl. 76, figs. 6-8.

Trenton (Flanagan): Near Burgin, Kentucky.

Holotype.—Cat. No. 46033, U.S.N.M.

Trochonema ovoides Grabau.

Trochonema ovoides Grabau, Michigan Geol. Surv., Geol., 1st ser., 1909, p. 193, pl. 23, figs. 3, 4, 12, 13.

Upper Monroan: Detroit River opposite Amherstburg, Ontario (Amherstburg); Salt shaft, Detroit, Michigan (Lucas).

Trochonema pauper (Hall).

Pleurotomaria pauper Hall, 20th Rep. New York State Cab. Hist., 1868, p. 343 (extras, 1865).—Kindle and Breger, 28th Ann. Rep. Dep. Geol. Nat. Res. Indiana, p. 456, pl. 12, figs. 5, 6.

Trochonema pauper—Continued.

Trochonema (Pleurotomaria) pauper Hall, 20th Rep. New York State Cab. Hist., 1868, p. 365, pl. 15 (6), figs. 5, 6, 9; p. 387.—Clarke and Ruedemann, Mem. New York State Mus., 5, 1903, p. 63.

Trochonema (Cyclonema?) pauper Hall, 20th Rep. New York State Mus., Nat. Hist., rev. ed., 1870, p. 395, pl. 15, figs. 5, 6, 9; pl. 25, fig. 13.

Niagaran: Racine, Wisconsin (Racine); Huntington, Indiana.

Plesiotype.—Cat. No. 52957, U.S.N.M. (Kindle and Breger).

Trochonoma pauper ohioense Hall and Whitfield.

Trochonema pauper ohioensis Hall and Whitfield, Pal. Ohio, 2, 1875, p. 143, pl. 8, fig. 4.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1230, fig.

Niagaran (Guelph): Greenfield, Ohio.

TROCHONEMA (GYRONEMA) PULCHELLUM Grabau and Shimer. See Gyronema pulchellum.

Trochonema rectangulare (Raymond).

Lophospira rectangularis Raymond, Amer. Jour. Sci., 4th ser., 20, 1905, p. 377.

Trochonema rectangulare Raymond, Ann. Carnegie Mus., 4, 1908, p. 206, pl. 53, figs. 11, 12.

Chazyan (Day Point): Valcour Island, New York.

Trochonema retrorsum Ulrich and Scofield.

Trochonema retrorsum Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 1051, pl. 77, figs. 35–38.

Black River (Decorah): Goodhue County, Minnesota.

Holotype.—Cat. No. 46034, U.S.N.M.

Trochonema (Eunema) robbinsi Ulrich and Scofield.

Trochonema (Eunema) robbinsi Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 1053, pl. 76, figs. 11–15.—Schuchert, Proc. U. S. Nat. Mus., 22, 1900, p. 167.

Trenton: Wykoff, Minnesota (Prosser); Baffin Land.

Cotype.—Cat. No. 46035, U.S.N.M.

Trochonema rugosum Ulrich and Scofield.

Trochonema rugosum Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 1049, pl. 77, figs. 19–22.

Black River (Platteville): Minneapolis, etc., Minnesota; Beloit, Wisconsin.

Cotypes.—Cat. No. 46036, U.S.N.M.

Trochonema (Eunema) salteri Ulrich and Scofield.

Trochonema (Eunema) salteri Ulrich and Scofield, Geol. Minnesota, 3 pt. 2, 1897, p. 1053, pl. 77, figs. 42–43.

Trenton (Prosser): Goodhue County, Minnesota.

Holotype.—Cat. No. 46037, U.S.N.M.

Trochonema (Eunema) simile Ulrich and Scofield.

Trochonema (Eunema) simile Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 1053.

Trenton (Prosser): Wykoff, Minnesota.

Cotypes.—Cat. No. 46038, U.S.N.M.

Trochonema (Eunema) strigillatum (Salter).

Eunema strigillata Salter, Geol. Surv. Canada, dec. 1, 1859, p. 29, pl. 6, fig. 4.—Billings, Geol. Canada, Geol. Surv. Canada, 1863, p. 145, fig. 88.—Zittel, Handb. Pal., 2, 1882, p. 189, fig. 235.—Whiteaves, Canadian Rec. Sci., 5, 1893, p. 323 (loc. cit.); Pal. Foss., Geol. Surv. Canada, pt. 3, 1897, p. 199.

Trochonema (Eunema) strigillatum—Continued.

Trochonema (Eunema) strigillatum Ulrich, Geol. Minnesota, 3, pt. 2, 1897, p. 1052 (gen. ref.).

Black River: Pauquette's Rapids, Ottawa River (Leray), near Watertown, New York; (?)Lower Fort Garry, Manitoba.

Trochonema subcrassum Ulrich and Scofield.

Trochonema subcrassum Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 1051, pl. 77, figs. 30-34.

Trenton: Mercer and Boyle Counties, Kentucky (Flanagan); near Cannon Falls, Minnesota (Prosser).

Cotypes.—Cat. No. 46039, U.S.N.M.

Trochonema tricarinatum Billings.

Trochonema tricarinata Billings, Canadian Nat. Geol., 4, 1859, p. 356.

Canadian (Romaine): Mingan Islands, Canada.

Trochonema (Eunema) trilineatum (Hall).

Eunema? trilineata Hall, 20th Rep. New York State Cab. Hist., 1868, p. 346, pl. 15 (6), fig. 3; rev. ed., 1870, p. 397, pl. 15, fig.3.

Niagaran (Racine): Racine, Wisconsin.

Trochonema umbilicatum (Hall).

Pleurotomaria umbilicata Hall, Pal. New York, 1, 1847, p. 43, pl. 10, figs. 9a-k; p. 175, pl. 38, figs. 1a-g.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 100, 101, pl. 5, figs. 4a, b.—Billings, Canadian Nat. Geol., 1, 1856, p. 42, figs. 4, 5.—Chapman, Canadian Jour., n. s., 7, 1862, p. 121, fig. 124; Expos. Min. Geol. Canada, 1864, p. 124, fig. 124.—Nicholson, Rep. Pal. Prov. Ontario, pt. 1, 1875, p. 19, fig. 7e.

Trochonema umbilicata Salter, Geol. Surv. Canada, Can. Org. Rem., dec. 1, 1859, p. 27, pl. 6, fig. 3.—Billings [in Hind, Narrative Canadian Red River Expl., Expd. of 1857 and Assinniboine and Saskatchewan Exped. of 1858, 2, 1860, p. 287; Geol. Canada, Geol. Surv. Canada, 1863, p. 145, text fig. 92; p. 180, text fig. 172; Cat. Sil. Foss., Anticosti, Geol. Surv. Canada, 1866, p. 17 (loc. ref.).—Meek and Worthen, Geol. Surv. Illinois, 3, 1868, p. 314, pl. 3, figs. 5a, b.—Miller, N. A. Geol. Pal., 1889, p. 429, fig. 719.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1231, figs.—Whiteaves, Canadian Rec. Sci., 5, 1893, p. 323 (loc. occ.).—Keyes, Missouri Geol. Surv., 5, 1894, p. 155.—Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 2, 1895, p. 124 (loc. occ.); ibid., pt. 3, 1897, p. 198.—Ulrich and Schofield, Geol. Minnesota, 3, pt. 2, 1897, p.1047, pl. 77, figs. 1-8.—Schuchert, Proc. U. S. Nat. Mus., 22, 1900, p. 167.—Ruedemann, Bull. New York State Mus., 49, 1901, p. 35.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 669, fig. 926.

Black River and Trenton: Watertown, Middleville, Trenton Falls, etc., New York; Canada; Kentucky; Tennessee; Illinois; Minnesota; Iowa; etc.

Plesiotypes.—Cat. Nos. 46040-46042, U.S.N.M.

Trochonema umbilicatum canadense Ulrich.

Trochonema umbilicatum var. canadensis Ulrich, Geol. Minnesota, 3, pt. 2, 1897, p. 1048, pl. 77, figs. 4-6.

Black River (Leray): Pauquettes Rapids, Ottawa River, Canada.

Holotype.—Cat. No. 46043, U.S.N.M.

Trochonema umbilicatum latum Ulrich.

Trochonema umbilicatum var. latum Ulrich, Geol. Minnesota, 3, pt. 2, 1897, p. 1048, pl. 77, figs. 7, 8.

Stones River (Lebanon): Middle Tennessee.

Holotype.—Cat. No. 46044, U.S.N.M.

rochonema vagrans Ulrich and Scofield.

Trochonema vagrans Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 1049, pl. 77, fig. 46; pl. 78, figs. 10–13.—Grabau, Amer. Nat., 1902, p. 939, fig. 15.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 670, fig. 928a, b.

Black River (Platteville): Minneapolis, Minnesota.

Cotype.—Cat. No. 46045, U.S.N.M.

ROCHONEMOPSIS Meek. See Trochonema Salter.

ROCHURUS Beyrich. See Staurocephalus Barrande.

ROCHUS HELICITES Sowerby. See Platyschisma helicites.

rochus huroniensis Castelnau. Not recognized.

Trochus huroniensis Castelnau, Essai Syst. Sil. l'Amerique Septent., 1843, p. 35.

"Silurian": Ottawa River, Canada.

ROCHUS LENTICULARIS Owen. See Liospira vitruvia.

ROCHUS SARATOGENSIS Walcott. See Matherella saratogensis.

ROOSTOCRINUS Shumard. Genotype: Pentremites reinwardti Troost.

Troostocrinus Shumard, Trans. Acad. Sci. St. Louis, 2, 1866, p. 384, footnote.—Meek and Worthen, Geol. Surv. Illinois, 5, 1873, p. 507.—Hambach, Trans. Acad. Sci. St. Louis, 4, 1880, p. 153.—Etheridge and Carpenter, Ann. Mag. Nat. Hist., 5th ser., 9, 1882, p. 247.—Barris, Proc. Davenport Acad. Sci., 4, 1884, p. 93, footnote.—Wachsmuth, Proc. Davenport Acad. Sci., 4, 1884, p. 79.—Carpenter, Ann. Mag. Nat. Hist., 5th ser., 15, 1885, p. 290.—Etheridge and Carpenter, Cat. Blastoidea British Mus., 1886, p. 191.—Miller, N. A. Geol. Pal., 1899, p. 287.—Bather, Treatise on Zool., pt. 3, Echinoderma, London, 1900, p. 86, fig. 8; Rep. Mus. Assoc., 1900, p. 107.—Wachsmuth, Zittel-Eastman Textb. Pal., 1, 1900, p. 195.—Beede, 30th Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1906, p. 1264.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 478.—Springer, Zittel-Eastman Textb. Pal., 2d ed., 1913, p. 170.

Clavæblastus Hambach, Trans. Acad. Sci. St. Louis, 13, 1903, p. 44.

roostocrinus? dubius Rowley.

Troostocrinus? dubius Rowley, Amer. Geol., 34, 1904, p. 274, pl. 16, figs. 28, 29.

Niagaran or Helderbergian: One mile and a half below Wittenberg, Missouri.

roostocrinus reinwardti (Troost).

Pentremites reinwardtii Troost, Trans. Geol. Soc. Pennsylvania, 1, 1835, p. 224, pl. 10, figs. 9–12; 5th Geol. Rep. Tennessee, 1840, p. 55; 6th Rep., ibid., 1841, p. 14.—Yandell and Shumard, Contr. Geol. Kentucky, 1847, p. 6.—Yandell, Proc. Amer. Assoc. Adv. Sci., 5, 1851, p. 232.—Dujardin and Hupe, Hist. Nat. Zooph. Ech., 1862, p. 99.—Meek, Amer. Jour. Sci., 3d ser., 7, 1874, p. 376.

Pentatrematites Reinwardtii Roemer, Archiv. f. Naturges., 17, 1, 1851, p. 372, pl. 6, figs. 13a–c.—Bronn, Klassen und Ordn. Thier-Reichs, 2, 1860, pl. 23, fig. 4a, b.—Roemer, Mon. Fossil. Crin., 1852, p. 52, pl. 3, fig. 12a–c; Sil. Fauna d. West. Tennessee, Breslau, 1860, p. 60, pl. 3, figs. 2a–c; Leth. geog., 1, Leth. Pal., Atlas, 1876, pl. 11, fig. 15.

Pentremites (Troostocrinus) Reinwardtii Shumard, Trans. Acad. Sci. St. Louis, 2, 1866, pp. 384–385.

Troostocrinus Reinwardtii Etheridge and Carpenter, Ann. Mag. Nat. Hist., 5th ser., 9, 1882, p. 248; Cat. Blastoidea British Mus., 1886, p. 193, fig. 7; p. 194, pl. 12, figs. 11, 12; pl. 17, fig. 17.—Bather, Treatise on Zool., pt. 3, Echinoderma, London, 1900, p. 87, fig. 8.—Wood, Bull., U. S. Nat. Mus., 64, 1909, p. 17, pl. 3, figs. 2–4.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 478, fig. 1788.

Tryblidium erato (Billings).

Metoptoma Erato Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 39 (adv. sheets, 1862); Geol. Canada, 1863, p. 145, fig. 145, fig. 95a, b.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 402, figs.

Tryblidium Erato Whiteaves, Pal. Foss. Geol. Surv. Canada, 3, pt. 1, 1884, p. 31 (gen. ref.).

Black River (Leray): Pauquettes Rapids, Ottawa River, Canada.

TRYBLIDIUM? ESTELLA Whiteaves. See Archinacella estella.

Tryblidium eubule (Billings).

Metoptoma Eubule Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 38 (adv. sheets, 1862).

Tryblidium Eubule Whiteaves, Pal. Foss. Geol. Surv. Canada, 3, pt. 1, 1884, p. 31 (gen. ref.).—Raymond, Ann. Carnegie Mus., 4, 1908, p. 217.

Chazy or Black River?: Phillipsburg, Quebec.

TRYBLIDIUM EXSERTUM Sardeson. See Stenotheca exserta.

Tryblidium hyrie (Billings).

Metoptoma Hyrie Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 87, fig. 79 (adv. sheets, 1862).

Tryblidium Hyrie Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 1, 1894, p. 31 (gen. ref.).

Ozarkian? (Levis—erratics): Point Levis, Quebec.

TRYBLIDIUM INDIANENSE Miller. See Archinacella indianense.

TRYBLIDIUM? INSTABILIS Whiteaves. See Archinacella instabilis.

TRYBLIDIUM MADISONENSE Miller. See Cyrtocerina madisonensis.

Tryblidium modestum Ulrich and Scofield.

Tryblidium modestum Ulrich and Scofield, Geol. Minnesota, 3, pt. 2, 1897, p. 826, pl. 82, figs. 1 and 2.

Black River (Decorah): Near Cannon Falls, Minnesota.

Tryblidium niobe (Billings).

Metoptoma Niobe Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 37, figs. 38a, b (adv. sheets, 1862); Geol. Canada, Geol. Surv. Canada, 1863, p. 276, fig. 281a, b.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 402, 2 figs.

Triblidium Niobe Whiteaves, Pal. Foss., Geol. Surv. Canada, pt. 1, 1884, p. 31 (gen. ref.).

Canadian (Beekmantown): Phillipsburg, Quebec.

Tryblidium nycteis (Billings).

Metoptoma Nycteis Billings, Pal. Foss., Geol. Surv. Canada, 1865, p. 38, figs. 39a, b (adv. sheets, 1862).

Tryblidium Nycteis Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 1, 1884, p. 31 (gen. ref.).—Miller, N. A. Geol., Pal., 1889, p. 429, fig. 720.—Sardeson, Jour. Geol., 11, 1903, p. 479, fig. 4.

Triblidium nycteis Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 604, fig. 803.

Canadian (Romaine): Mingan Islands, Canada.

Tryblidium ovale Whitfield.

Triblidium ovale Whitfield, Bull. Amer. Mus. Nat. Hist., 1886, p. 305, pl. 24, figs. 28-29.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1235, fig.—Seely, Vermont State Geol., Rep. 7, 1910, pl. 62, figs. 28, 29.

Canadian (Beekmantown): Fort Cassin, Vermont.

Tryblidium ovatum Whitfield.
Tryblidium ovatum Whitfield, Bull. Amer. Mus. Nat. Hist., 1, 1886, p. 305, pl. 24, figs. 23-25.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1235, fig.—Seely, Vermont State Geol., Rep. 7, 1910, pl. 62, figs. 23-25.
Canadian (Beekmantown): Fort Cassin, Vermont.

Tryblidium patulum Cleland.
Tryblidium patulum Cleland, Bull. Amer. Pal., 4, 1903, p. 15, pl. 3, figs. 15, 16.
Ozarkian (Little Falls): Little Falls, New York.

TRYBLIDIUM PILEOLIUM Lesley. See Archinacella pileolum.

Tryblidium repertum (Sardeson.)
Tryblidium repertum Sardeson, Bull. Minnesota Acad. Nat. Sci., 4, 1896, p. 102, pl. 5, figs. 21, 22.
Canadian (Shakopee): Near Argyle, Wisconsin.

Tryblidium retrorsum (Whitfield).
Metoptoma retrorsa Whitfield, Ann. Rep. for 1879, Wisconsin Geol. Surv., 1880, p. 54; Geol. Wisconsin, 4, 1882, p. 197, pl. 3, fig. 18.—Chamberlin, Geol. Wisconsin, 1, 1883, p. 142, fig.
Tryblidium retrorsum Sardeson, Jour. Geol., 11, 1903, p. 479, fig. 5.
Ozarkian (Mendota): Near Baraboo, Wisconsin.

TRYBLIDIUM SIMILE Sardeson. See Archinacella similis.

TRYBLIDIUM SIMPLEX Whiteaves. See Archinacella simplex.

TRYBLIDIUM TRENTONENSIS Whiteaves. See Archinacella trentonensis.

TRYBLIDIUM VALIDUM Sardeson. See Archinacella valida.

Tuberculopora Ringueberg. Genotype: T. inflata Ringueberg.
Tuberculopora Ringueberg, Bull. Buffalo Soc. Nat. Sci., 5, 1886, p. 21.
Observation.—Not recognizable without a restudy of the types. Possibly a pathological specimen of crinoid column.

Tuberculopora inflata Ringueberg.
Tuberculopora inflata Ringueberg, Bull. Buffalo Soc. Nat. Sci., 5, 1886, p. 21, pl. 2, fig. 18.
Clinton (Rochester): Lockport, New York.

TUBIPORA CATENULARIA Linnæus. See Halysites catenularia.

TUBIPORA CATENULATUS Gmelin. See Halysites catenularia.

Tubipora lamellosa Owen. Not recognized.
Tubipora lamellosa Owen, Geol. Expl. Iowa, Wisconsin, Illinois, 2d ed., 1844, p. 78, pl. 14, fig. 13.
Niagaran: Iowa and Wisconsin.

TUNARIA Hoek. Genotype: T. cochabambina Hoek.
Tunaria Hoek, Neues Jahrb. Min., Geol., Pal., 34, 1912, p. 247.

Tunaria cochabambina Hoek.
Tunaria cochabambina Hoek, Neues Jahrb. Min., Geol., Pal., 34, 1912, p. 247, pl. 8, fig. 9.
Ordovician: Cochabamba, Bolivia.

TURBINICRINITES VERNEUILI Troost. See Melocrinus roemeri.

TURBINOLIA MITRATA Eaton. See Streptelasma corniculum.

TURBINOLIA PYRAMIDALIS Hisinger. See Goniophyllum pyramidale.

TURBINOLIA TURBINATA PYRAMIDALE Hisinger. See Goniophyllum pyramidale.

TURBO AMERICANUS D'Orbigny. See Holopea paludiniformis.

TURBO BILIX D'Orbigny. See Cyclonema bilix.

TURBO DILUCULA Hall. See Holopea dilucula.

TURBO OBLIQUUS Emmons. See Holopea obliqua.

TURBO? OBSCURA Hall. See Holopea obscura.

TURBO? PARVULUS Hall. See Cyclora parvula.

TURBO SYMMETRICUS Emmons. See Holopea symmetrica.

TURBO TENNESSEENSIS Roemer. See Strophostylus tennesseense.

TURBO VENTRICOSUS Emmons. See Holopea ventricosa.

TURRILEPAS Woodward. Genotype: Chiton wrightianus Dekoninck.
Turrilepas Woodward, Quart. Jour. Geol. Soc. London, 21, 1865, p. 489.—Salter, Cat. Camb. Sil. Fossils, 1873, p. 129.—Etheridge, Proc. Royal Phys. Soc. Edinburgh, 4, 1878, p. 164.—Nicholson and Etheridge, Mon. Sil. Foss. Girvan Dist., 1880, pp. 213, 299.—Hall and Clarke, Pal. New York, 7, 1888, p. 63.—Miller, N. A. Geol. Pal., 1889, p. 569.—Vogdes, Annals New York Acad. Sci., 5, 1889, p. 36.—Clarke, Zittel-Eastman Textb. Pal., 1, 1900, p. 649; 2d ed., 1913, p. 744.

Turrilepas canadensis Woodward.
Turrilepas canadensis Woodward, London Geo. Mag., 3d dec., 6, 1889, p. 274.
Trenton (Collingwood): Ottawa, Ontario.

Turrilepas(?) filosus Ruedemann.
Turrilepas(?) filosus Ruedemann, Bull. New York State Mus., 42, 1901, p. 577, pl. 2, figs. 13–15.
Trenton (Snake Hill): Mechanicsville, Saratoga County, New York.

Turrilepas gracilissimus (Ringueberg).
Plumulites gracilissimus Ringueberg, Proc. Acad. Nat. Sci. Philadelphia, 1888, p. 136, pl. 7, fig. 8.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 723, figs.
Turrilepas gracillimus Miller, N. A. Geol. Pal., 1889, p. 569 (gen. ref.).
Clinton (Rochester): Lockport, New York.

Turrilepas ottawaensis Ami.
Turrilepis Ottawaensis Ami, Geol. Surv. Canada, Ann. Rep., n. s., 12, App. G., 1901, p. 67 (nom. nud.).
Trenton: Governor's Bay, Ottawa, Canada.

TURRITOMA Ulrich. Genotype: Murchisonia acrea Billings.
Turritoma Ulrich, Geol. Minnesota, 3, pt. 2, 1897, p. 959 (Turritospira in error on p. 1013).—Koken, Neues Jahrb. Min., Geol., Pal., 1898, 1, p. 20.—Donald, Quart. Jour. Geol. Soc. London, 58, 1902, p. 330.

Turritoma acrea (Billings).
Murchisonia acrea Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 232, fig. 216.
Turritoma acrea Ulrich, Geol. Minnesota, 3, pt. 2, 1897, p. 959 (gen. ref.).
Canadian (Quebec—G): Port aux Choix, Newfoundland.

Turritoma ada (Billings).
Murchisonia Ada Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 346, fig. 333.
Turritoma ada Ulrich, Geol. Minnesota, 3, pt. 2, 1897, p. 959 (gen. ref).
Canadian (Beckmantown): Leeds and Grenville Counties, Canada.

Turritoma boylei (Nicholson).
Murchisonia Boylei Nicholson, Rep. Pal. Prov. Ontario, pt. 2, 1875, p. 71, pl. 3, fig. 1.—Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 2, 1895, p. 81.—Nicholson, Quart. Jour. Geol. Soc. London, 31, 1875, p. 547, pl. 26, fig. 1.
Turritoma boylei Ulrich, Geol. Minnesota, 3, pt. 2, 1897, p. 959 (gen. ref.).
Hormotoma? Boylei Donald, Quart. Jour. Geol. Soc. London, 55, 1899, p. 263 (gen. ref.).
Niagaran (Guelph): Elora, Ontario.

Turritoma constricta (Whiteaves).
Murchisonia constricta Whiteaves, Pal. Foss., Geol. Surv. Canada, 3, pt. 1, 1884, p. 25, pl. 4, fig. 4; pt. 2, 1895, p. 82 (loc. occ.).
Turritoma constricta Ulrich, Geol. Minnesota, 3, pt. 2, 1897, p. 959 (gen. ref.).
Niagaran (Guelph): Durham, Ontario.

Turritoma laphami (Hall).
Murchisonia laphami Hall, Rep. Sup. Geol. Surv. Wisconsin, 1, 1861, p. 36; 20th Rep. New York State Cab. Nat. Hist., 1868, p. 366, pl. 16 (6), fig. 20; rev. ed., 1870, p. 396, pl. 15, fig. 20.
Turritoma laphami Ulrich, Geol. Minnesota, 3, pt. 2, 1897, p. 959 (gen. ref.).
Murchisonia (Turritoma) laphami Kindle and Breger, 28th Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1904, p. 461, pl. 13, fig. 7.
Niagaran: Racine, Wisconsin (Racine); Huntington, Indiana.
Plesiotype.—Cat. No. 52942, U.S.N.M.

TURRITOSPIRA Ulrich. See Turritoma Ulrich.

TYLOPTERUS Clarke and Ruedemann. See Eurypterus subgenus Tylopterus.

TYRRELLIA Parks. Genotype: T. severnensis Parks.
Tyrrellia Parks in Tyrrell, 22d Rep. Ontario Bur. Mines, 1913, p. 35.

Tyrrellia severnensis Parks.
Tyrrellia severnensis Parks in Tyrrell, 22d Rep. Ontario Bur. Mines, 1913, p. 35.
Niagaran (Guelph): Severn River, Ontario.

ULRICHIA Jones. Genotype: U. conradi Jones.
Ulrichia Jones, Quart. Jour. Geol. Soc. London, 46, 1890, p. 543; 49, 1893, p. 293.—Ulrich, Jour. Cincinnati Soc. Nat. Hist., 13, 1891, p. 203.—Miller, N. A. Geol.-Pal., 1st App., 1892, p. 711.—Bonnema, Mitt. Min. Geol. Inst. Groningen, 2, 1909, p. 51.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 346.

Ulrichia bivertex (Ulrich).
Leperditia bivertex Ulrich, Jour. Cincinnati Soc. Nat. Hist., 2, 1879, p. 11, pl. 7, figs. 5, 5a.

Ulrichia bivertex—Continued.

Ulricha? bivertex Ruedemann, Bull. New York State Mus., 162, 1912, p. 120, pl. 9, figs. 11, 12.

Trenton: Covington, Kentucky, and vicinity; Canajoharie, New York.

Holotype.—Cat. No. 41365, U.S.N.M.

Ulrichia nodosa (Ulrich).

Primitia nodosa Ulrich, Jour. Cincinnati Soc. Nat. Hist., 13, 1890, p. 134, pl. 10, figs. 11a–12b.

Ulrichia nodosa Ulrich, Jour. Cincinnati Soc. Nat. Hist., 13, 1891, p. 203 (gen. ref.).—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 346, fig. 1658o, o′.

Eden-Richmond: Cincinnati, Ohio, and vicinity.

Cotypes.—Cat. Nos. 41552, 41553, U.S.N.M.

UNCINULINA Bayle. See Wilsonia Kayser.

UNCINULUS Bayle. Genotype: Rhynchonella subwilsoni D'Orbigny.

Uncinulus Bayle, Explic. de la Carte Geolog. France, 4, 1878, Atlas, pl. 11, figs. 17–200.—Waagen, Pal. Indica, 13th ser., 1, 1883, p. 424.—Œhlert, Fischer's Man. Conch., 1887, p. 1306.—Hall and Clarke, Pal. New York, 8, pt. 2, 1893, p. 195; 13th Ann. Rep. New York State Geol., 1895, p. 828.—Schuchert, Zittel-Eastman Textb. Pal., 1, 1900, p. 324; 2d ed., 1913, p. 397.—Williams, Bull. U. S. Geol. Surv., 165, 1900, p. 60.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 290.

Uncinulus convexorus Maynard.

Uncinulus convexorus Maynard, Maryland Geol. Surv., Low. Dev., 1913, p. 368, pl. 65, figs. 9–14.

Helderbergian (Keyser): Tonoloway, Cash Valley, Cumberland, etc., Maryland; near Cherry Run and Keyser, West Virginia; Hyndman, Pennsylvania.

Uncinulus gordoni Maynard.

Unsinulus gordoni Maynard, Maryland Geol. Surv., Low. Dev., 1913, p. 367, pl. 65, figs. 1–6.

Helderbergian (Keyser): Cash Valley, Maryland.

Uncinulus keyserensis Schuchert and Maynard.

Uncinulus keyserensis Schuchert and Maynard, Maryland Geol. Surv., Low. Dev., 1913, p. 368, pl. 65, figs. 7, 8.

Helderbergian (Keyser): Cumberland, Tonoloway, etc., Maryland; Keyser, West Virginia.

Uncinulus nucleolatus (Hall).

Rhynchonella nucleolata Hall (part), 10th Ann. Rep. New York State Cab. Nat. Hist., 1857, p. 68; Pal. New York, 3, 1859, p. 227, pl. 31, figs. 2f–2y (not figs. 1a–1c=U. globulus; 1d, f, and 2a–e=?U. globulous).

Uncinulus nucleolata Hall and Clarke, Pal. New York, 8, pt. 2, 1893, p. 199.

Uncinulus nucleolatus Schuchert and Maynard, Maryland Geol. Surv., Low. Dev., 1913, p. 365, pl. 64, figs. 16, 17.

Helderbergian: New York (New Scotland); Keyser, West Virginia (Keyser).

Uncinulus nucleolatus angulatus Maynard.

Uncinulus nucleolatus var. angulatus Maynard, Maryland Geol. Surv., Low. Dev., 1913, p. 366, pl. 64, figs. 18–20.

Helderbergian? (Keyser?): Cumberland, Maryland.

Uncinulus septentrionalis Holtedahl.

Uncinulus septentrionalis Holtedahl, 2d Arct. Exp. "Fram," 1898–1902, No. 32, 1914, p. 22, pl. 8, fig. 3.

Helderbergian (Lower beds): Seal Bay, Southwest Ellesmereland, Arctic America.

Uncinulus stricklandi (Sowerby).

Terebratula stricklandi Sowerby, Murchison's Sil. Syst., 1839, pl. 13, fig. 19.

Rhynchonella tennesseensis Hall (not Roemer), Trans. Albany Institute, 4, 1860, p. 228; 28th Rep. New York State Mus. Nat. Hist., doc. ed., 1876, pl. 26, figs. 34–40.—White, 2d Ann. Rep. Indiana Bu. Statis. Geol., 1880, p. 496, pl. 3, figs. 2–4; 10th Rep. State Geol. Indiana, 1881, p. 128, pl. 3, figs. 2–4.

Rhynchonella stricklandi Hall, 28th Rep. New York State Mus. Nat. Hist., doc. ed., 1879, p. 165, pl. 26, figs. 34–40; 11th Rep. State Geol. Indiana, 1882, p. 308, pl. 26, figs. 34–40.—Nettelroth, Kentucky Fossil Shells, Mem. Kentucky Geol. Surv., 1889, p. 81, pl. 27, figs. 9–11; pl. 29, figs. 3–6.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 901, figs.

Uncinulus (Uncinulina) stricklandi Hall and Clarke, Pal. New York, 8, pt. 2, 1895, pl. 58, figs. 38–40.

Uncinulus stricklandi Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 290, fig. 358.

Silurian: Europe; Waldron and St. Paul, Indiana; Newsom, Tennessee (Waldron and Laurel); Louisville, Kentucky (Louisville); West Tennessee (Brownsport).

Plesiotype.—Cat. No. 51356, U.S.N.M. (Nettelroth).

Uncinulus tennesseensis (Roemer).

Rhynchonella tennesseensis Roemer, Die Sil. Fauna West. Tennessee, 1860, p. 72, pl. 5, fig. 14.—Hall and Whitfield, 27th Rep. New York State Cab. Nat. Hist., 1875, pl. 9, figs. 24–26; Pal. Ohio, 2, 1875, p. 136, pl. 7, figs. 16, 17.—Hall, Trans. Albany Inst., 4, 1863, p. 228 (loc. occ.).—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 902, figs.

Niagaran: Perry, Wayne, and Decatur Counties, Tennessee (Brownsport); Louisville, Kentucky (Louisville); Yellow Springs, Ohio.

UNIO ORTHONOTUS Conrad. See Modiolopsis orthonota.

UNIO PRIMIGENIUS Conrad. See Modiolopsis primigenia.

URASTERELLA Sturtz (part). See Stenaster Billings.

URASTERELLA McCoy. Genotype: Uraster ruthveni Forbes.

Urasterella McCoy, British Pal. Rocks Foss., 1854, p. 59.—Hall, 20th Rep. New York State Cab. Nat. Hist., 1866, p. 289; rev. ed., 1870, p. 332.—McCoy, Geol. Surv. Victoria, dec. 1, 1874, p. 42.—Zittel, Handb. Pal., 1, 1879, p. 453.—Nicholson and Etheridge, Mon. Sil. Foss. Girvan Dist., 1880, p. 323.—Sturtz, Neues Jahrb. Min. Geol., Pal., 2, 1886, p. 152; Palæontographica, 36, 1890, p. 219; Verh. naturh. Ver. preuss. Rheinl., etc., 1893, pp. 40, 56.—Gregory, Geol. Mag., dec. 4, 6, 1899, p. 352.—Schuchert, Bull. U. S. Nat. Mus., 88, 1915, p. 173.

Stenaster Billings (part), Geol. Surv. Canada, Can. Org. Rem., dec. 3, 1858, p. 77.—Sturtz, Verh. naturh. Ver. preuss. Rheinl., etc., 50, 1893, pp. 40, 56.

Rœmeraster Sturtz, Palæontographica, 32, 1886, p. 85; ibid., 36, 1890, p. 220; Verh. naturh. Ver. preuss. Rheinl., etc., 50, 1893, pp. 52, 73. (Genotype: Asterias asperula Roemer.)

URASTERELLA—Continued.

Protasteracanthion Sturtz, Palæontographica, 32, 1886, p. 90; Verh. naturh. Ver. preuss Rheinl., etc., 50, 1893, pp. 54, 75. (Genotype: P. primus Sturtz=Asterias asperula Roemer.)

Salteraster Sturtz, Verh. naturh. Ver. preuss Rheinl., etc., 50, 1893, pp. 42, 60. (Genotype: Palæaster asperrima Salter.)

Urasterella grandis (Meek).

Stenaster grandis Meek, Amer. Jour. Sci., 3d ser., 3, 1872, p. 258.—Meek, Geol. Surv. Ohio, Pal., 1, 1873, p. 66, pl. 3, bis., figs. 7a–c.—Miller, N. A. Geol. Pal., 1889, p. 283, fig. 432.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1051, figs.—James, Jour. Cincinnati Soc. Nat. Hist., 18, 1895, p. 136.

Urasterella grandis Meek, Geol. Surv. Ohio, Pal., 1, 1873, p. 67.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 731, pl. 3, figs. 6–6b.—Schuchert, Bull. U. S. Nat. Mus., 88, 1915, p. 180, pl. 27, figs. 6–8; pl. 28, figs. 1, 2; pl. 30, figs. 1–4.

Palæaster harrisi Miller, Jour. Cincinnati Soc. Nat. Hist., 2, 1879, p. 117, pl. 10, figs. 2, 2a.

Stenaster harrisi James, ibid., 18, 1895, p. 136.

Richmond: Richmond, Indiana; Waynesville, Ohio.

Plesiotype.—Cat. No. 40887, U.S.N.M. (Holotype of P. harrisi).

Urasterella huxleyi (Billings).

Stenaster Huxleyi Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 213, fig. 197.

Urasterella huxleyi Schuchert, in Frech, Foss. Cat., 1, Anim., pt. 3, 1914, p. 45; Bull. U. S. Nat. Mus., 88, 1915, p. 182, pl. 29, fig. 2.

Chazyan (Quebec—I): Point Rich, Newfoundland.

Urasterella pulchella (Billings).

Palæaster pulchellus Billings, Geol. Surv. Canada, Rep. Progr. for 1853–56, 1857, p. 292.

Urasterella (Stenaster) pulchella Hall, 20th Rep. New York State Cab. Nat. Hist., 1868, p. 289; rev. ed., 1870, p. 332.

Urasterella pulchella Raymond, Ottawa Nat., 26, 1912, p. 106, fig. 1.—Schuchert, Bull. U. S. Nat. Mus., 88, 1915, p. 178, pl. 28, figs. 3, 4; pl. 30, fig. 5.

Stenaster pulchellus Billings, Geol. Surv. Canada, dec. 3, 1858, p. 79, pl. 10, fig. 2.—Chapman, Canadian Jour., n. s., 6, 1861, p. 517.—Wright, Mon. British Foss. Echinod., Oolitic, 2, pt. 1 (Pal. Soc. for 1861), 1862, p. 28.

Trenton: Ottawa, Ontario; Trenton Falls, Middleville, etc., New York.

Urasterella ulrichi Schuchert.

Urasterella ulrichi Schuchert, in Frech, Foss. Cat., 1, Anim., pt. 3, 1914, p. 46 (nom. nud.); Bull. U. S. Nat. Mus., 88, 1915, p. 183, pl. 29, fig. 1; pl. 30, figs. 6, 7.

Black River (Platteville): Minneapolis, Minnesota.

VAGINOCERAS Hyatt. Genotype: Orthoceras multitubulatum Hall.

Vaginoceras Hyatt, Proc. Boston Soc. Nat. Hist., 22, 1884, p. 266.—Ruedemann, Bull. New York State Mus., 90, 1906, p. 412.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 41.

Vaginoceras longissimum (Hall).

Endoceras longissimum Hall, Pal. New York, 1, 1847, p. 59, pl. 18, figs. 1, 1a.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 152.—Barrande, Syst. Sil. du Centre Boheme, 2, pt. 3, 1874, p. 755, pl. 236.—Nicholson, Rep. Pal. Prov. Ontario, pt. 2, 1875, p. 20, fig. 8.—Zittel, Handb. Pal., 2, Munich, 1884, p. 362 fig. 497.—Miller, N. A. Geol. Pal., 1889, p. 436, fig. 734.

Vaginoceras longissimum—Continued.

Orthoceras (Endoceras) longissimum Roemer, Leth. geog., 1, Leth Pal., 1876, Atlas, pl. 6, fig. 3a.

Vaginoceras longissimum Clarke and Ruedemann, Bull. New York State Mus., 65, 1903, p. 658 (gen. ref.).

Black River (Watertown): Watertown, New York.

Vaginoceras multitubulatum (Hall).

Endoceras multitubulatum Hall, Pal. New York, 1, 1847, p. 59, pl. 18, figs. 2a, b.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 152.—Whitfield, Bull. Amer. Mus. Nat. Hist., 1, 1881, p. 25, fig. 2.—Walcott, Mono. U. S. Geol. Surv., 8, 1884, p. 87, figs. 1, 2.

Vaginoceras multitubulatum Clarke, Geol. Minnesota, 3, pt. 2, 1897, p. 778 (gen. ref.).

Black River (Watertown): Watertown, New York.

Vaginoceras oppletum Ruedemann.

Vaginoceras oppletum Ruedemann, Bull. New York State Mus., 90, 1906, p. 413, pl. 4, figs. 2, 3; pl. 5, figs. 1–4; pl. 6, fig. 1; pl. 9, figs. 1–3, fig. 4.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 41, fig. 1236, 1237.

Chazyan (Day Point, Valcour): Isle La Motte, Vermont; Valcour Island, etc., New York.

VALCOUREA Raymond. See Dinorthis subgenus Valcourea.

VALLATOTHECA Foerste. Genotype: V. manitoulini Foerste.

Vallatotheca Foerste, Bull. Sci. Lab. Denison Univ., 17, 1914, p. 482.

Vallatotheca manitoulini Foerste.

Vallatotheca manitoulini Foerste, Bull. Sci. Lab. Denison Univ., 17, 1914, p. 482, pl. 4, fig. 4.

Richmond: Cape Smyth, Manitoulin Island, Lake Huron.

Vallatotheca unguiformis (Ulrich).

Stenotheca unguiformis Ulrich, Geol. Minnesota, 3, pt. 2, 1897, p. 843, pl. 61, figs. 42–44.

Triblidium unguiforme Miller, N. A. Geol. Pal., 2d App., 1897, p. 771 (gen. ref.).

Vallatotheca unguiformis Foerste, Bull. Sci. Lab. Denison Univ., 17, 1914, p. 482 (gen. ref.).

Trenton (Flanagan): Between Burgin and Danville, Kentucky.

Holotype.—Cat. No. 45998, U.S.N.M.

VANUXEMIA Billings. Genotype: V. inconstans Billings.

Vanuxemia Billings, Canadian Nat. Geol., 3, 1858, p. 438; Canadian Jour., n. s., 6, 1861, p. 256.—Miller, N. A. Geol. Pal., 1889, p. 515.—Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 549.—Dall, Zittel-Eastman Textb. Pal., 1, 1900, p. 365; 2d ed., 1913, p. 442.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 412.

Vanuxemia abrupta Ulrich.

Vanuxemia abrupta Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 560, pl. 3, figs. 39–44.—Schuchert, Proc. U. S. Nat. Mus., 22, 1900, p. 163.

Trenton: Fillmore and Goodhue Counties, Minnesota (Prosser); Baffin Land.

Cotypes.—Cat. Nos. 46316, 46317, U.S.N.M.

Vanuxemia acutumbona (Billings).

Cyrtodonta acutumbona Billings, Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 49.

anuxemia acutumbona—Continued.
Whitella? acutumbona Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 565 (gen. ref.).
Cypricardites acutumbona Miller, N. A. Geol. Pal., 1889, p. 476 (gen. ref.).
Gamachian (Ellis Bay): One mile south Junction Cliff, Anticosti.

anuxemia baffinensis Schuchert.
Vanuxemia baffinensis Schuchert, Proc. U. S. Nat. Mus., 22, 1900, p. 163, pl. 13, figs. 26–28.
Mohawkian: Head of Frobisher Bay, Baffin Land.
Cotypes.—Cat. No. 28160, U.S.N.M.

anuxemia bayfieldi Billings.
Vanuxemia Bayfieldii Billings, Geol. Surv. Canada, Rep. Progr. for 1857, 1857, p. 187, fig. 17; Canadian Nat. Geol., 3, 1858, p. 439, fig. 17; Canadian Jour., n. s., 6, p. 256, fig. 128.—Miller, N. A. Geol. Pal., p. 515, fig. 934.
Richmond: Bayfield Sound, Lake Huron.

anuxemia cardinata Ulrich.
Vanuxemia cardinata Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 559.
Trenton (Curdsville): Mercer County, Kentucky.
Cotypes.—Cat. Nos. 46318, 46319, U.S.N.M.

anuxemia crassa Ulrich.
Vanuxemia crassa Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 553, pl. 38, fig. 27.
Black River (Decorah): St. Paul, Minnesota.
Holotype.—Cat. No. 46320, U.S.N.M.

anuxemia decipiens Ulrich.
Vanuxemia decipiens Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 562, pl. 39, figs. 1–5.
Black River (Platteville): Minneapolis, Minnesota.
Cotype.—Cat. No. 46321, U.S.N.M.

anuxemia dixonensis Meek and Worthen.
Vanuxemia dixonensis Meek and Worthen, Proc. Chicago Acad. Sci., 1866, 1, p. 16; Geol. Surv. Illinois, 3, 1868, p. 297, pl. 1, fig. 5a, b.—Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 550, pl. 38, figs. 1–5.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 414, fig. 535a–c.
Black River (Platteville): Dixon, Illinois; Janesville, etc., Wisconsin; Minneapolis, St. Paul, and Cannon Falls, Minnesota.
Plesiotypes.—Cat. No. 46322, U.S.N.M.

anuxemia dixonensis insueta Ulrich.
Vanuxemia dixonensis var. insueta Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 551, pl. 38, figs. 6, 7.
Black River (Platteville): Minneapolis, Minnesota.
Holotype.—Cat. No. 46323, U.S.N.M.

anuxemia fragosa (Sardeson).
Cypricardites (Vanuxemia) fragosus Sardeson, Bull. Minnesota Acad. Nat. Sci., 4, 1896, p. 70, pl. 2, figs. 1–3.
St. Peter: Highland Park and South St. Paul, Minnesota.

anuxemia gibbosa Ulrich.
Vanuxemia gibbosa Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 559.
Trenton (Curdsville): Mercer County, Kentucky.

Vanuxemia hayniana (Safford).

Cyrtodonta hayniana Safford, Geol. Tennessee, 1869, pl. 2 (F), fig. 1a–e.

Cypricardites haynianus Ulrich, 19th Ann. Rep. Geol. and Nat. Hist. Sur. Minnesota, 1892, p. 240, fig. 25.

Cypricardites triangularis Sardeson, Bull. Minn. Acad. Nat. Sci., 3, 1892, p. 338, pl. 6, fig. 23.

Vanuxemia hayniana Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 557, pl. 38, fig. 32; fig. 36–iv, p. 479; pl. 60, figs. 20–21.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 414, fig. 535k.

Trenton: Central Tennessee (Catheys); Danville, etc., Kentucky (Flanagan); St. Paul, etc., Minnesota (Prosser).

Cotypes and *plesiotypes*.—Cat. Nos. 46324, 46326, U.S.N.M.

Vanuxemia inconstans Billings.

Vanuxemia inconstans Billings, Geol. Surv. Canada, Rep. Progr. for 1857, 1858, p. 186, figs. 15, 16; Canadian Nat. Geol., 3, 1858, p. 438, figs. 15, 16.

Black River (Leray): Fourth Chute of the Bonnechere, La Petite Chaudiere Rapids and valley of the Ottawa, Canada.

Vanuxemia limbata (Raymond).

Ctenodonta limbata Raymond, Amer. Jour. Sci., 20, 1905, p. 371.

Chazyan (Crown Point): Sloop Bay, Valcour Island, New York.

Vanuxemia media Ulrich.

Vanuxemia media Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 553, pl. 38, figs. 23–26.

Black River (Platteville): Minneapolis and Cannon Falls, Minnesota.

Cotypes.—Cat. Nos. 46327, 46328, U.S.N.M.

Vanuxemia montrealensis Billings.

Vanuxemia Montrealensis Billings, Canadian Nat. Geol., 4, 1859, p. 447, figs. 25, 26; Geol. Canada, Geol. Surv. Canada, 1863, p. 131, fig. 61a, b.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1247, 2 figs. only.—Whiteaves, Ottawa Nat., 22, 1908, p. 107.

Chazyan (Lower and Upper): Island of Montreal and near L'Original, Canada.

Vanuxemia nana (Ulrich).

Cypricardites nanus Ulrich, 19th Ann. Rep. Geol. Nat. Hist. Surv. Minnesota, 1892, p. 239, fig. 24.

Vanuxemia nanus Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 558 (gen. ref.).

Trenton (Flanagan): One mile south of Burgin, Kentucky.

Cotypes.—Cat. No. 46329, U.S.N.M.

Vanuxemia niota (Hall).

Cypricardites niota Hall, Rep. Supt. Geol. Surv. Wisconsin, 1861, p. 29; Geol. Wisconsin, 1, 1862, p. 38, fig. 8; p. 438.—Whitfield, ibid., 4, 1882, p. 208, pl. 5, fig. 10.—Chamberlin, ibid., 1, 1883, p. 156.—Whitfield, Mem. Amer. Mus. Nat. Hist., 1, pt. 2, 1895, p. 55, pl. 6, figs. 17–20.

Vanuxemia niota Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 560, pl. 38, fig. 35.

Black River (Platteville): Beloit and Mineral Point, Wisconsin; Rockton, Illinois.

Vanuxemia obtusifrons (Ulrich).

Cypricardites obtusifrons Ulrich, 19th Ann. Rep., Geol. and Nat. Hist. Surv. Minnesota (March), 1892, p. 233, figs. 18, 19.

Cypricardites vicinus Sardeson, Bull. Minnesota Acad. Nat. Sci., 3, (April), 1892, p. 339, pl. 6, fig. 22.

anuxemia obtusifrons—Continued.
Vanuxemia obtusifrons Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 554, pl. 38, figs. 15–19.
Black River (Platteville): Minneapolis, Minnesota.
Holotype and *plesiotypes.*—Cat. Nos. 46330, 46331, U.S.N.M.

anuxemia parvula Whiteaves.
Vanuxemia parvula Whiteaves, Ottawa Nat., 22, 1908, p. 111, pl. 3, figs. 11, 12.
Black River (Lowville): Hog Back, Ottawa, Ontario.

anuxemia rectirostris (Hall).
Cypricardites rectirostra Hall, Rep. Supt. Geol. Surv. Wisconsin, 1861, p. 29.—Whitfield, Mem. Amer. Mus. Nat. Hist., 1, pt. 2, 1895, p. 55, pl. 6, figs. 21–25.
Vanuxemia rectirostra Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 535 (gen. ref.).
Black River (Platteville): Janesville, Wisconsin.

anuxemia rotundata (Hall).
Cypricardites rotundata Hall, Rep. Supt. Geol. Surv. Wisconsin, 1861, p. 29; Geol. Rep. Wisconsin, 1, 1862, p. 38, fig. 7; p. 437.—Whitfield, ibid., 4, 1874, p. 208 (not pl. 5, fig. 11=V. suberecta Ulrich), Geol. Wisconsin, 4, 1882, p. 208, pl. 5, fig. 11.—Chamberlin, ibid., 1, 1883, p. 156.—Whitfield, Mem. Amer. Mus. Nat. Hist., 1, pt. 2, 1895, p. 53, pl. 6, figs. 13–16.
Vanuxemia rotundata Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 552, pl. 38, figs. 8–14.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 414, fig. 535 j.
Black River (Platteville): Beloit, Wisconsin; Minneapolis, Minnesota.
Plesiotype.—Cat. No. 46332, U.S.N.M. (Ulrich).

anuxemia sardesoni (Ulrich).
Cypricardites sardesoni Ulrich, 19th Ann. Rep. Geol. and Nat. Hist. Surv. Minnesota, 1892, pp. 231, 232, figs. 16, 17.
Vanuxemia sardesoni Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 555, pl. 37, figs. 17–19; pl. 38, fig. 45.
Black River (Platteville): Minneapolis, Minnesota.
Holotype.—Cat. No. 46333, U.S.N.M.

anuxemia suberecta Ulrich.
Cypricardites rotundatus (part) Whitfield, Rep. Geol. Surv. Wisconsin, 4, 1874, p. 208, pl. 5, fig. 11.
Vanuxemia suberecta Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 553, pl. 38, figs. 20–22.
Black River: Beloit, Wisconsin.

anuxemia subrotunda Ulrich.
Vanuxemia subrotunda Ulrich, Geol. Minnesota, 3, 1894, p. 559, pl. 38, figs. 36–38.
Black River (Decorah): Goodhue County and Chatfield, Minnesota.
Cotypes.—Cat. No. 46334, U.S.N.M.

anuxemia terminalis (Ulrich).
Cypricardites terminalis Ulrich, Amer. Geol., 10, 1892, p. 98, pl. 7, figs. 8–10.
Vanuxemia terminalis Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 556, pl. 38, figs. 33 and 34.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 413, fig. 535 g–i.
Black River (Platteville): Minneapolis and Cannon Falls, Minnesota; Beloit, Wisconsin.
Cotype.—Cat. No. 46335, U.S.N.M.

Vanuxemia umbonata Ulrich.

Vanuxemia umbonata Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 556, pl. 38, figs. 28–31.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 414, fig. 535d-f.

Black River: Minneapolis and St. Paul, Minnesota (Decorah); Mercer County, Kentucky.

Holotype.—Cat. No. 46336, U.S.N.M.

Vanuxemia ungulata (Billings).

Cyrtodonta? ungulata Billings, Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 15, fig. 3a, b.

Cypricardites ungulata Miller, N. A. Geol. Pal., 1889, p. 477 (gen. ref.).

Richmond (English Head): Macasty Bay, Anticosti.

Vanuxemia wortheni (Ulrich).

Cypricardites, sp. undet. Meek and Worthen, Illinois Geol. Surv., 3, 1868, p. 311, pl. 3, figs. 9a, 9d.

Cypricardites wortheni Ulrich, Amer. Geol., 1, 1888, p. 180.

Vanuxemia wortheni Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 561, pl. 39, figs. 6, 7.

Trenton (Galena): Mount Carroll, Illinois.

Plesiotype.—Cat. No. 46337, U.S.N.M.

VERMIPORA Hall. Genotype: V. serpuloides Hall.

Vermipora Hall, 26th Rep. New York State Mus. Nat. Hist., 1874, p. 109.—Rominger, Geol. Surv. Michigan, 3, pt. 2; 1876, p. 69.—Nicholson, Tab. Corals Pal. Period, 1879, p. 111.—Zittel, Handb. Pal., 1, 1880, p. 619.—Roemer, Leth. geog., pt. 1, Leth. Pal., 1883, p. 448.—Hall and Simpson, Pal. New York, 6, 1887, p. 12.—Miller, N. A. Geol. Pal., 1889, p. 207.—Girty, 48th Rep. New York State Mus., 2, 1897, p. 307; 14th Rep. State Geol. New York for 1894, 1897, p. 307.—Sardeson, Neues Jahrb. Min., Geol., Pal., Beilage-Band, 10, 1896, p. 328.

Vermipora niagarensis Rominger.

Vermipora niagarensis Rominger, Geol. Surv. Michigan, 3, pt. 2, 1876, p. 70, pl. 24, fig. 3.

Niagaran: Masonville, Iowa; Point Detour, Lake Huron.

Vesicularia Rominger. See Cystiphorolites Miller.

Vexillum Rouault. See Dædalus Rouault.

VINELLA Ulrich. Genotype: V. repens Ulrich.

Vinella Ulrich, Jour. Cincinnati Soc. Nat. Hist., 12, 1890, p. 173.—Miller, N. A. Geol. Pal., 1st App., 1892, p. 685.—Vine, Proc. Yorkshire Geol., Geol. Polyt. Soc., 12, 1892, p. 84.—Ulrich, Geol. Minnesota, 3, 1893, p. 112.—Pocta, Syst. Sil. Centre Boheme, 8, pt. 1, 1894, p. 17.—Simpson, 14th Ann. Rep. State Geol. New York for 1894, 1897, p. 604.—Nickles and Bassler, Bull. U. S. Geol. Surv., 173, 1900, p. 19.—Ulrich and Bassler, Smiths. Misc. Coll., 45, 1904, p. 273.—Bassler, Bull. U. S. Geol. Surv., 292, 1906, p. 12.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 118.—Bassler, Bull. U. S. Nat. Mus., 77, 1911, p. 55; Zittel-Eastman Textb. Pal., 2d ed., 1913, p. 317.

Vinella? multiradiata Ulrich and Bassler.

Vinella? multiradiata Ulrich and Bassler, Smiths. Misc. Coll. (quart. issue), 45, 1904, p. 276, pl. 68, fig. 8.—Bassler, Bull. U. S. Geol. Surv., 292, 1906, p. 13, pl. 4, fig. 1.

nella? multiradiata—Continued.
Clinton (Rochester): Lockport, New York.
Anticostian (Jupiter River): Island of Anticosti.
Holotype.—Cat. No. 43144, U.S.N.M.

nella radialis Ulrich.
Vinella radialis Ulrich, Geol. Minnesota, 3, 1893, p. 113, fig. 8b.—Ulrich and Bassler, Smiths. Misc. Coll. (quart. issue), 45, 1904, p. 274, pl. 68, fig. 4.
Maysville (Corryville): Cincinnati, Ohio.
Holotype.—Cat. No. 43149, U.S.N.M.

inella radiciformis (Vine).
Ascodictyon radians Vine (part), Quart. Jour. Geol. Soc. London, 37, 1881, p. 619.
Ascodictyon radiciforme Vine, ibid., 38, 1882, p. 53, figs. 1, 3; Ann. Mag. Nat. Hist., 5th ser., 14, 1884, p. 83, figs. 1–5; Proc. Yorkshire Geol. Polytech. Soc., 9, 1887, pp. 183–4, pl. 12, fig. 5; ibid., 12, 1892, p. 87.
Vinella radiciformis Ulrich, Geol. Nat. Hist. Surv. Minnesota, 3, pt. 1, 1893, p. 113.—Ulrich and Bassler, Smiths. Misc. Coll. (quart. issue), 45, 1904, p. 275, pl. 68, fig. 7.—Bassler, Bull. U. S. Geol. Surv., 292, 1906, p. 12, pl. 4, figs. 2, 3.
Silurian: Shropshire, England (Wenlock); Rochester and Lockport, New York (Rochester); Waldron, Indiana (Waldron); Seven Mile Creek, near Eaton, Ohio (Brassfield); Island of Anticosti (Gun River).
Plesiotypes.—Cat. Nos. 35476, 43146, U.S.N.M.

inella radiciformis conferta Ulrich.
Vinella radiciformis var. conferta Ulrich, Geol. Minnesota, 3, 1893, p. 113, fig. 8c, d.—Ulrich and Bassler, Smiths. Misc. Coll. (quart. issue), 45, 1904, p. 275, pl. 68, figs. 5, 6.
Niagaran (Waldron): Waldron, Indiana.
Holotype.—Cat. No. 43147, U.S.N.M.

inella repens Ulrich.
Vinella repens Ulrich, Jour. Cincinnati Soc. Nat. Hist., 12, 1890, p. 174, fig. 1; Geol. Minnesota, 3, 1893, p. 114, pl. 1, figs. 1–5.—Simpson, 14th Ann. Rep. State Geol. New York for 1894, 1897, fig. 222 (p. 604).—Ulrich and Bassler, Smiths. Misc. Coll., 45, 1904, p. 274, pl. 68, figs. 1–3.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 118, fig. 177c, e.—Bassler, Bull. U. S. Nat. Mus., 77, 1911, pp. 55, 56, fig. 5; Zittel-Eastman Textb. Pal., 1913, p. 317, figs. 437b, c.
Black River (Decorah): St. Paul, etc., Minnesota.
Ordovician (Jewe and Wesenberg): Wesenberg, etc., Esthonia.
Cotypes.—Cat. No. 43148, U.S.N.M.

IRGIANA Twenhofel. Genotype: Pentamerus barrandi Billings.
Virgiana Twenhofel, Bull. Victoria Mem. Mus., 3, 1914, p. 28.

irgiana barrandei (Billings).
Pentamerus barrandi Billings, Geol. Surv. Canada, Rep. Progr. for 1856, 1857, p. 296; Geol. Canada, 1863, p. 316, fig. 327.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 615, figs.
Barrandella barrandii Hall and Clarke, Pal. New York, 8, pt. 2, 1893, p. 243, fig. 174; pl. 71, figs. 17–20.
Clorinda barrandei Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 184.
Virgiana barrandei Twenhofel, Bull. Victoria Mem. Mus., 3, 1914, p. 28.
Anticostian (Becsie River, Gun River): Becsie River Bay, Anticosti.

VOGDESIA Raymond. Genotype: Isotelus bearsi Raymond.
Vogdesia Raymond, Ann. Carnegie Mus., 7, 1910, p. 70; 7th Rep. Vermont Geol. Surv., 1910, p. 225.

Vogdesia bearsi (Raymond).
Isotelus? bearsi Raymond, Annals Carnegie Mus., 3, 1905, p. 345, pl. 10, figs. 21-24 (not 25).
Vogdesia bearsi Raymond, Ann. Carnegie Mus., 7, 1910, p. 70, pl. 19, figs. 10-12; 7th Rep. Vermont State Geol., 1910, p. 225, pl. 32, figs. 21-24; pl. 39, figs. 10-12.
Chazyan (Crown Point): Sloop Bay, Valcour Island, New York.

WALCOTTIA Miller and Dyer. Genotype: W. rugosa Miller and Dyer.
Walcottia Miller and Dyer, Jour. Cincinnati Soc. Nat. Hist., 1, 1878, p. 39.—James, ibid., 7, 1884, p. 144; ibid., 8, 1885, p. 161.—Miller, N. A. Geol. Pal., 1889, p. 522.

Walcottia? cookana Miller and Dyer.
Walcottia? cookana, Miller and Dyer, Contr. to Pal., No. 2, 1878, p. 11, pl. 3, figs. 12, 12a.
Maysville (Corryville): Cincinnati, Ohio.

Walcottia rugosa Miller and Dyer.
Walcottia rugosa Miller and Dyer, Jour. Cincinnati Soc. Nat. Hist., 1, 1878, p. 39, pl. 2, figs. 11, 11a.—Miller, N. A. Geol. Pal., 1889, p. 522, fig. 946.
Maysville (Fairmount): Cincinnati, Ohio.

Walcottia sulcata James.
Walcottia sulcata James, Paleontologist, No. 5, 1881, p. 44.
Eden (Economy): Cincinnati, Ohio.

WALDHEIMIA FORMOSA Hall. See Rhynchospira formosa Hall.

WALDHEIMIA GLOBOSA Hall. See Rhynchospira globosa.

WESTONIA Matthew. See Obolus subgenus Westonia Matthew.

WESTONIA ESCASONI Matthew. See Obolus (Westonia) escasoni.

WHITEAVESIA Ulrich.
Genotype: Modiolopsis cincinnatiensis Hall and Whitfield.
Modiolopsis (part) of various authors.
Actinomya Ulrich, Geol. Surv. Ohio, 7, 1893, p. 656; Geol. Minnesota, 3, pt. 2, 1894, p. 513.
Whiteavesia Ulrich, Geol. Surv. Ohio, 7, 1893, Expl. pl. 56; Geol. Minnesota, 3, 1894, p. 628.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 985.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 517.
Pholadomorpha Foerste, Bull. Sci. Lab. Denison Univ., 17, 1914, p. 279 (Genotype: Modiolopsis pholadiformis Hall).

Whiteavesia cancellata (Walcott).
Modiolopsis cancellata Walcott, Trans. Albany Inst., 10, 1883, p. 22, pl. 1, figs. 8, 8a.
Actinomya cancellata Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 504 (gen. ref.).
Whiteavesia cancellata Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 628 (gen. ref.).
Utica: Trenton, Oneida County, New York.
Trenton (Upper): West Covington, Kentucky.
Plesiotypes.—Cat. No. 46338, U.S.N.M.

Whiteavesia chambliensis (Foerste).
Pholadomorpha chambliensis Foerste, Bull. Sci. Lab. Denison Univ., 17, 1914, p. 281, pl. 1, fig. 8.
Cincinnatian (Pulaski): Chambly, Quebec.

Whiteavesia cincinnatiensis (Hall and Whitfield).
Modiolopsis Cincinnatiensis Hall and Whitfield, Geol. Surv. Ohio, Pal., 2, 1875, p. 88, pl. 2, figs. 14–15.
Actinomya cincinnatiensis Ulrich, Geol. Minnesota, 3, pt. 2, 1894, pp. 504, 514, text figs. 39a–d.
Whiteavesia cincinnatiensis Ulrich, Rep. Geol. Surv. Ohio, 7, 1893, p. 656, pl. 46, figs. 16–17.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 1022, pl. 48, figs. 7, 7a.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 517, fig. 695c.
Trenton (Upper): Covington, Kentucky, and vicinity.
Plesiotypes.—Cat. No. 46339, U.S.N.M.

Whiteavesia cincta Ruedemann.
Whiteavesia cincta Ruedemann, Bull. New York State Mus., 162, 1912, p. 95, pl. 5, fig. 1.
Trenton (Snake Hill): Snake Hill, Saratoga County, New York.

Whiteavesia corrugata (Miller and Faber).
Modiolopsis corrugata Miller and Faber, Jour. Cincinnati Soc. Nat. Hist., 15, 1892, p. 79, pl. 1, fig. 1.
Modiolopsis sulcata Miller and Faber, ibid., 15, 1892, p. 80, pl. 1, fig. 4.
Maysville (Corryville): Cincinnati, Ohio.

Whiteavesia cumingsi Ruedemann.
Whiteavesia cumingsi Ruedemann, Bull. New York State Mus., 162, 1912, pl. 5, figs. 2, 3,
Trenton (Snake Hill): Snake Hill, Saratoga County, New York.

Whiteavesia expansa Raymond.
Whiteavesia? expansa Raymond, Annals Carnegie Mus., 3, No. 4, 1906, p. 578.
Chazyan (Crown Point): Valcour Island, New York.

Whiteavesia kentonensis (Ulrich).
Actinomya kentonensis Ulrich, Geol. Surv. Ohio, 7, 1893, p. 658, pl. 56, figs. 18–20.
Whiteavesia kentonensis Ulrich, ibid., 7, 1893, pl. 56, figs. 18–20.
Trenton (Upper): Covington, Kentucky, and vicinity.
Cotypes.—Cat. No. 46340, U.S.N.M.

Whiteavesia modioliformis (Meek and Worthen).
Modiolopsis modioliformis Meek and Worthen, Geol. Surv. Illinois, 3, 1868, p. 294, pl. 1, figs. 7b, 8.
Actinomya modioliformis Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 515, pl. 36, figs. 19, 20.
Whiteavesia modioliformis Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 628 (gen. ref.).—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 517, fig. 695d.
Black River (Platteville): Mineral Point and Beloit, Wisconsin.
Plastotype.—Cat. No. 46341, U.S.N.M.

Whiteavesia oblonga (Ulrich).
Modiolopsis oblonga Ulrich, Amer. Geol., 5, 1890, p. 272, fig. 1a–c.—James, J. F., Amer. Geol., 6, 1890, p. 67. (Note regarding synonymy.)

Whiteavesia oblonga—Continued.

Actinomya oblonga Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 504 (gen. ref.).
Whiteavesia oblonga Ulrich, Geol. Minnesota 3, pt. 2, 1894, p. 628 (gen. ref.).
Trenton (Upper): West Covington, Kentucky.
Holotype.—Cat. No. 46252, U.S.N.M.

Whiteavesia pholadiformis (Hall).

Modiolopsis pholadiformis Hall, Geol. Lake Superior Land Dist., Foster and Whitney's Rep., 1851, p. 213, pl. 30, figs. 1a–c; pl. 31, fig. 1.—Miller, Cincinnati Quart. Jour. Sci., 1, 1874, p. 282.—Hall and Whitfield, Geol. Surv. Ohio, Pal., 2, 1875, p. 85, pl. 2, fig. 16.
Actinomya pholadiformis Ulrich, Geol. Minnesota, 3, pt. 2, 1894, pp. 504, 514, fig. 39c–d.
Whiteavesia pholadiformis Ulrich, Geol. Surv. Ohio, 7, 1893, pl. 56, figs. 21, 22.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 1023, pl. 48, fig. 8.
Pholadomorpha pholadiformis Foerste, Bull. Sci. Lab. Denison Univ., 17, 1914, p. 277, pl. 2, fig. 16; pl. 5, fig. 4.
Richmond: Bay des Noquets, Lake Michigan; Lake Huron; Ohio; Indiana.
Cincinnatian (Pulaski): Province of Quebec.
Plesiotypes.—Cat. No. 46342, U.S.N.M. (Ulrich).
Observation.—See Sedgwickia divaricata for a probable synonym.

Whiteavesia pholadiformis divaricata (Foerste).

Pholadomorpha pholadiformis divaricata Foerste, Bull. Sci. Lab. Denison Univ., 17, 1914, p. 279, pl. 2, fig. 14.
Cincinnatian (Pulaski): Riviere des Hurons, near St. Jean Baptiste, Quebec.

Whiteavesia pulchella (Ulrich).

Modiolopsis pulchella Ulrich, Amer. Geol., 5, 1890, p. 278, fig. 6a–c.
Actinomya pulchella Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 514 (gen. ref.).
Whiteavesia pulchella Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 628 (gen. ref.).
Trenton (Upper): West Covington, Kentucky.
Holotype.—Cat. No. 46343, U.S.N.M.

Whiteavesia saffordi (Ulrich).

Orthodesma saffordi Ulrich, 19th Ann. Rep. Geol. Nat. Hist. Surv. Minnesota, 1892, p. 229, fig. 15.
Actinomya saffordi Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 514 (gen. ref.).
Whiteavesia saffordi Ulrich, ibid., 3, pt. 2, 1894, p. 628 (gen. ref.).
Stones River (Murfreesboro): Murfreesboro, Tennessee.
Holotype.—Cat. No. 46344, U.S.N.M.

Whiteavesia subcarinata (Ulrich).

Actinomya subcarinata Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 516, pl. 36, figs. 17, 18.
Trenton (Prosser): Goodhue County, Minnesota.
Holotype.—Cat. No. 46345, U.S.N.M.

Whiteavesia superba (Hall).

Modiolopsis? superbus Hall, Rep. Sup. Geol. Surv. Wisconsin, 1861, p. 31.—Whitfield, Mem. Amer. Mus. Nat. Hist., 1, pt. 2, 1895, p. 56, pl. 7, figs. 16-18.
Actinomya superba Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 514 (gen. ref.).
Whiteavesia superba Ulrich, ibid., 3, pt. 2, 1894, p. 628 (gen. ref.).
Black River (Platteville): Beloit, Wisconsin.

Whiteavesia symmetricus Ulrich.
Whiteavesia symmetricus Ulrich in Schuchert, Proc. U. S. Nat. Mus., 22, 1900, p. 162, pl. 13, figs. 15–17.
Mohawkian: Head of Frobisher Bay, Baffin Land.
Holotype.—Cat. No. 28162, U.S.N.M.

Whiteavesia? undata Raymond.
Whiteavesia? undatum Raymond, Ann. Carnegie Mus., 3, 1906, p. 578.
Chazyan (Crown Point): Valcour Island, New York.

WHITELLA Ulrich. Genotype: W. obliquata Ulrich.
Whitella Ulrich, Amer. Geol., 6, 1890, p. 176; Geol. Minnesota, 3, pt. 2, 1894, p. 564; Geol. Surv. Ohio, 7, 1893, p. 678.—Miller, N. A. Geol. Pal., 1st App., 1892, p. 702.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 414.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 985.
Rhynchotropis Meek, Proc. Acad. Nat. Sci. Philadelphia, 1872, p. 327; Geol. Surv. Ohio, Pal., 1, 1873, p. 136 (not defined).

WHITELLA? ACUTUMBONA Ulrich. See Vanuxema acutumbona.

Whitella arctica Schuchert.
Whitella arcticus Schuchert, Proc. U. S. Nat. Mus., 22, 1900, p. 163, pl. 13, figs. 23–25.
Mohawkian: Head of Frobisher Bay, Baffin Land.
Holotype.—Cat. No. 33059, U.S.N.M.

WHITELLA CANADENSIS Raymond. See Sowteria canadensis.

Whitella carinata (Meek).
Dolabra carinata Meek, Proc. Acad. Nat. Sci. Philadelphia, 1872, p. 326.
Cypricardites? carinata Meek, Geol. Surv. Ohio, Pal., 1, 1873, p. 135, pl. 12, figs. 6a, b (Rhynchotropis carinata suggested at end of description).—Miller, Cincinnati Quart. Jour. Sci., 1, 1874, p. 218.
Whitella carinata Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 565 (gen. ref.).
Maysville: Cincinnati, Ohio.
Observation.—Although probably a species of Whitella, the type specimen is so crushed that the species can not be said to be recognizable.

Whitella complanata Foerste.
Whitella complanata Foerste, Bull. Sci. Lab. Denison Univ., 17, 1914, p. 300, pl. 1, fig. 2.
Cincinnatian (Pulaski): Riviere des Hurons, Quebec.

Whitella compressa Ulrich.
Whitella compressa Ulrich, Amer Geol., 6, No. 9, 1890, p. 180, figs. 15a–d; Geol. Minnesota, 3, pt. 2, 1894, p. 568, pl. 41, figs. 6–9.
Black River (Decorah): Minneapolis, Minnesota, and vicinity.
Holotype and *plesiotype*.—Cat. No. 46346, U.S.N.M.

Whitella concentrica Ulrich.
Whitella concentrica Ulrich, 19th Ann. Rep. Geol. Nat. Hist. Surv. Minnesota, 1892, p. 247, fig. 31; Geol. Minnesota, 3, pt. 2, 1894, p. 569, pl. 41, figs. 2 and 3.
Black River (Decorah): Minneapolis, Minnesota.
Holotype.—Cat. No. 46347, U.S.N.M.

Whitella elongata Ruedemann.
Whitella elongata Ruedemann, Bull. New York State Mus., 162, 1912, pl. 5, figs. 9, 10.
Trenton (Snake Hill): Snake Hill, Saratoga County, New York.

Whitella goniumbonata Foerste.
Whitella goniumbonata Foerste, Bull. Sci. Lab. Denison Univ., 17, 1914, p. 301, pl. 1, fig. 3.
Cincinnatian (Pulaski): Riviere des Hurons, Quebec.

Whitella hindi (Billings).
Cyrtodonta Hindi Billings, Pal. Foss., 1, Geol. Surv. Canada, 1865, p. 151, figs. 131a, b (Adv. sheets, 1862); Geol. Canada, Geol. Surv. Canada, 1863, p. 214, fig. 218.
Cypricardites hindi Miller, N. A. Geol. Pal., 1889, p. 476 (gen. ref.).
Whitella hindi Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 535 (gen. ref.).
Cincinnatian (Pulaski): Near Toronto, Ontario.

Whitella megambona (Whitfield).
Cypricardites megambonus Whitfield, Ann. Rep. Geol. Surv. Wisconsin, 1877, p. 73; Geol. Wisconsin, 4, 1882, p. 210, pl. 5, figs. 7–8.—Chamberlin, Geol. Wisconsin, 1, 1883, p. 156, fig.
Whitella megambona Ulrich, Amer. Geol., 6, 1890, p. 384, Geol. Minnesota, 3, pt. 2, 1894, p. 570, pl. 41, figs. 4–5.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 415, figs. 537a–b.
Black River (Platteville): Beloit, Wisconsin; Minneapolis, Minnesota.
Plesiotype.—Cat. No. 46343, U.S.N.M.

Whitella obliquata Ulrich.
Whitella obliquata Ulrich, Amer. Geol., 6, 1890, pp. 177, 178, figs. 13a–e; Geol. Minnesota, 3, pt. 2, 1894, p. 565, pl. 40, figs. 31–32.—Miller, N. A. Geol. Pal., 1st App., 1892, p. 702, fig. 1261—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana 1908, p. 1024, pl. 48, figs. 10–10d.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 415, fig. 537c.
Richmond: Blanchester, Waynesville, etc., Ohio; Indiana (Waynesville); Spring Valley, Minnesota (Maquoketa).
Cotypes.—Cat. Nos. 46349–46352, U.S.N.M.

Whitella ohioensis Ulrich.
Whitella Ohioensis, Ulrich, Geol. Surv. Ohio, 7, 1893, p. 678, fig. 2.
Richmond (Waynesville): Waynesville and Clarksville, Ohio.
Holotype.—Cat. No. 46353, U.S.N.M.

Whitella plebeia (Billings).
Cyrtodonta? plebeia Billings, Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 14, figs. 2a, 2c.
Cypricardites plebeia Miller, N. A. Geol. Pal., 1889, p. 477 (gen. ref.).
Whitella plebeia Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 535 (gen. ref.).
Richmond (English Head and Charleton): Charleton Point, etc., Anticosti.

Whitella præcipta Ulrich.
Whitella præcipta Ulrich, Amer. Geol., 6, 1890, p. 386; 19th Ann. Rep. Geol. Nat. Hist. Surv. Minnesota, 1892, p. 246, fig. 30; Geol. Minnesota, 3, pt. 2, 1894, p. 574, pl. 41, figs. 15, 16.
Trenton (Prosser): Near Cannon Falls, Minnesota.
Holotype.—Cat. No. 46354, U.S.N.M.

Whitella quadrangularis (Whitfield).
Cypricardites quadrangularis Whitfield, Jour. Cincinnati Soc. Nat. Hist., 1, 1878, p. 138, pl. 6, fig. 5.—Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 566, pl. 40, figs. 28–30.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 415, figs. 536c, d.

Whitella quadrangularis—Continued.
Richmond: Clarksville, Waynesville, etc., Ohio (Waynesville); Savannah, Illinois; Spring Valley, Minnesota (Maquoketa).
Plesiotypes.—Cat. Nos. 46355, 46356, U.S.N.M.

Whitella rugatina Ulrich.
Whitella rugatina Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 569, pl. 41, fig. 1.
Black River (Decorah): Minneapolis, Minnesota.
Holotype.—Cat. No. 46357, U.S.N.M.

Whitella scofieldi Ulrich.
Whitella scofieldi Ulrich, Amer. Geol., 6, 1890, p. 181, fig. 15e; p. 382, fig. 16a–c; Geol. Minnesota, 3, pt. 2, 1894, p. 571, pl. 41, figs. 17–21.—Grabau and Shimer, N. A. Index Fossils, 1 (3), 1909, p. 415, fig. 536a–b.
Black River: St. Paul and Cannon Falls, Minnesota (Decorah); Beloit, Wisconsin (Platteville).
Holotype and *plesiotype.*—Cat. Nos. 46358, 46359, U.S.N.M.

Whitella securiformis Foerste.
Whitella securiformis Foerste, Bull. Sci. Lab. Denison Univ., 17, 1914, p. 299, pl. 1, fig. 1.
Cincinnatian (Pulaski): Riviere des Hurons, Quebec.

Whitella? sigmoidea (Billings).
Cyrtodonta sigmoidea Billings, Canadian Nat., Geol., 3, 1858, p. 438; Geol. Surv. Canada, Rep. Progr. for 1857, 1858, p. 186; Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 13, fig. 1a, b.
Cypricardites sigmoidea Miller, N. A. Geol., Pal., 1889, p. 477 (gen. ref.).
Whitella? sigmoidea Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 565 (gen. ref.).
Richmond (English Head and Charleton) and Gamachian (Ellis Bay): Macasty Bay, near West End Lighthouse, etc., Anticosti.

Whitella(?) siluriana Kindle and Breger.
Whitella(?) siluriana Kindle and Breger, 28th Ann. Rep. Dep. Geol. Nat. Res., Indiana, 1894, p. 447, pl. 10, fig. 15.
Niagaran: Wabash, Indiana.

Whitella sterlingensis (Meek and Worthen).
Dolabra sterlingensis Meek and Worthen, Proc. Acad. Nat. Sci. Philadelphia, 1866, p. 260; Geol. Surv. Illinois, 3, 1868, p. 399, pl. 4, fig. 10a–c.
Rhynchotropis sterlingensis Meek, Proc. Acad. Nat. Sci. Philadelphia, 1872, p. 327.
Cypricardites sterlingensis Miller, Cincinnati Quart. Jour. Sci., 1, 1874, p. 218.—Whitfield, Jour. Cincinnati Soc. Nat. Hist., 1, 1878, p. 137.
Whitella sterlingensis Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 567, pl. 41, figs. 27, 28.
Richmond (Maquoketa): Sterling, Illinois; Spring Valley, Minnesota; ?Richmond, Indiana.

Whitella subcarinata Ulrich.
Whitella subcarinata Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 572, pl. 41, figs. 22, 23.
Trenton (Prosser): Near Wykoff, Minnesota.
Holotype.—Cat. No. 46361, U.S.N.M.

Whitella suborbicularis Weller.

Whitella suborbicularis Weller, Geol. Surv. New Jersey, Pal., 3, 1903, p. 169, pl. 11, fig. 2.

Trenton: Jacksonburg, New Jersey.

Whitella subovata Ulrich.

Whitella subovata Ulrich, Amer. Geol., 6, 1890, p. 386, fig. 18.

Richmond (Waynesville): Waynesville, Ohio.

Cotypes.—Cat. Nos. 40510, 46920, U.S.N.M.

Whitella subtruncata (Hall).

Edmondia subtruncata Hall, Pal. New York, 1, 1847, p. 156, pl. 35, figs. 3a–b (not fig. 3c, or pl. 34, fig. 9).

Cyrtodonta subtruncata Billings, Geol. Surv. Canada, Rep. Progr. for 1857, p. 185; Can. Nat. Geol., 3, 1858, p. 437.

Cypricardia subtruncata Emmons, Amer. Geol., 1, pt. 2, 1855, p. 174, pl. 13, fig. 2.

Whitella subtruncata Weller, Geol. Surv. New Jersey, Pal., 3, 1903, p. 169, pl. 11, fig. 4.

Trenton: Middleville, Watertown, etc., New York; New Jersey; Canada.

Whitella truncata Ulrich.

Whitella truncata Ulrich, Amer. Geol., 6, 1890, p. 385, figs. 17a–c; Geol. Minnesota, 3, pt. 2, 1894, p. 572, pl. 41, figs. 10–14.

Trenton (Prosser): Goodhue County, Minnesota.

Holotype and *plesiotypes.*—Cat. No. 46363, U.S.N.M.

Whitella umbonata Ulrich.

Whitella umbonata Ulrich, Amer. Geol., 6, 1890, p. 178, figs. 14a–d.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 1025, pl. 48, figs. 9–9c.

Richmond (Waynesville): Middletown, etc., Ohio; Indiana.

Cotypes.—Cat. Nos. 46364, 46365, U.S.N.M.

Whitella ventricosa (Hall).

Edmondia ventricosa Hall, Pal. New York, 1, 1847, p. 155, pl. 35, figs. 1a–f.

Cardiomorpha ventricosa Emmons, Amer. Geology, 1, pt. 2, 1855, p. 174, pl. 14, figs. 5, 6; pl. 13, figs. 13, 15.

Cypricardites ventricosa Miller, N. A. Geol., Pal., 1889, p. 477 (gen. ref.).—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 575, figs.

Bodmania ventricosa Miller and Faber, Jour. Cincinnati Soc. Nat. Hist., 17, 1894, p. 24.

Whitella ventricosa Ulrich, Geol. Minnesota, 3, pt. 2, 1894, p. 573, pl. 41, figs. 24–26.—Ruedemann, Bull. New York State Mus., 49, 1901, p. 28.—Grabau and Shimer, N. A. Index Fossils, 1, 1909, p. 415, fig. 536e, f.

Trenton: Middleville, etc., New York; Goodhue and Fillmore Counties, Minnesota; Canada.

Plesiotypes.—Cat. No. 46366, U.S.N.M.

WHITFIELDELLA Hall and Clarke. Genotype: Atrypa nitida Hall.

Whitfieldella Hall and Clarke, Pal. New York, 8, 1893, p. 58; 13th Ann. Rep. New York State Geol., 1895, p. 766.—Grabau, Bull. New York State Mus., 45, 1901, p. 201; Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 201.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 346.

Whitfieldia (in error for Whitfieldella) Schuchert, Zittel-Eastman Textb. Pal., 2d ed., 1913, p. 415.

Whitfieldella acuminata Savage.

Whitfieldella acuminata Savage, Bull. Geol. Surv. Illinois, 23, 1913, p. 116, pl. 7, figs. 11, 12.

Upper Medinan (Channahon): Will County, Illinois.

Whitfieldella(?) billingsana (Meek and Worthen).

Centronella billingsana Meek and Worthen, Geol. Surv. Illinois, 3, 1868, p. 352, figs. a, b, c; pl. 6, fig. 5.

Whitfieldella(?) billingsana Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 460.—Savage, Bull. Geol. Surv. Illinois, 23, 1913, p. 90, pl. 5, figs. 11, 12.

Upper Medinan (Edgewood): Near Thebes, Illinois; Edgewood, Missouri.

Whitfieldella cylindrica Hall.

Atrypa cylindrica Hall, Pal. New York, 2, 1852, p. 76, pl. 24, fig. 2.

Atrypa crassirostra Hall, Pal. New York, 2, 1852, p. 269, pl. 55, fig. 4.

Merista cylindrica Hall, 12th Rep. New York State Cab. Nat. Hist., 1859, p. 77.

Athyris cylindrica Billings, Geol. Canada, 1863, p. 317, fig. 333; Geol. Canada, 1863, p. 317, fig. 332.

Meristella (?Meristina) cylindrica Meek, Pal. Ohio, 1, 1873, p. 180, pl. 15, fig. 2.

Whitfieldella cylindrica Hall and Clarke, Pal. New York, 8, pt. 2, 1893, p. 60, pl. 40; figs. 16–22.—Grabau, Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 203, fig. 127; Bull. New York State Mus., 45, 1901, p. 203, fig. 127.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 347, fig. 445.

Clinton (Irondequoit): Lockport, etc., New York.

Whitfieldella edmundsi Williams.

Whitfieldella edmundsi Williams, Proc. U. S. Nat. Mus., 45, 1913, p. 320, pl. 29, figs. 1–4.

Silurian (Edmunds): Burnt Cove, Washington County, Maine.

Cotypes.—Cat. No. 58944, U.S.N.M.

Whitfieldella erecta Foerste.

Whitfieldella erecta Foerste, Cincinnati Soc. Nat. Hist., Jour., 21, 1909, p. 19, pl. 1, fig. 9A–C.

Cayugan (Kokomo): Kokomo, Indiana.

Whitfieldella hyale (Billings).

Charionella? hyale Billings, Pal. Foss., 1, 1862, p. 166, fig. 150.—Hall and Clarke, Pal. New York, 8, pt. 2, 1893, pl. 42, figs. 20, 21.

Whitfieldella hyale Hall and Clarke, Pal. New York, 8, pt. 2, 1893, p. 60.—Whiteaves, Pal. Foss. Geol. Surv. Canada, 3, pt. 2, 1895, p. 63.

Niagaran (Guelph): Galt and Elora, Ontario; Wisconsin.

Whitfieldella intermedia (Hall).

Atrypa intermedia Hall, Pal. New York, 2, 1852, p. 77, pl. 24, figs. 3, 4, ?6.—Rogers, Geol. Pennsylvania, 2, 1858, pt. 2, p. 823, fig. 634.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 56, 4 figs.

Merista intermedia Hall, 12th Rep. New York State Cab. Nat. Hist., 1859, p. 77.

Athyris intermedia Nicholson and Hinde, Canadian Jour. Sci., 14, 1874, p. 157.—Nicholson, Pal. Prov. Ontario, 1875, p. 61, fig. 32A.

Whitfieldella intermedia Hall and Clarke, Pal. New York, 8, pt. 2, 1893, p. 60, pl. 40, figs. 1, 2.—Grabau, Bull. New York State Mus., 45, 1901, p. 203, fig. 126; Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 203, fig. 126.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 446, fig. 446.

Clinton (Irondequoit): Lockport, etc., New York.

Whitfieldella(?) julia (Billings).
Athyris Julia Billings, Pal. Fossils, 1, Geol. Surv. Car
124 (adv. sheets, 1862).
Meristella julia Miller, N. A. Geol. Pal., 1889, p. 354.
Whitfieldella(?) julia Schuchert, Bull. U. S. Geol. Sur
Anticostian (Jupiter River): Jumpers, Anticosti.

Whitfieldella lævis (Vanuxem).
Atrypa lævis Vanuxem, Geol. New York, Rep. 3d D
Rogers, Geol. Pennsylvania, 2, pt. 2, 1858, p. 825,
Merista lævis Hall, 10th Rep. New York State Cab. N
1-6; Pal. New York, 3, 1859, p. 247, pl. 39, figs.
Geol. Surv. Illinois, 3, 1868, p. 376, pl. 7, fig. 8.
Meristella lævis Hall and Clarke, Pal. New York, 8, p
pl. 44, fig. 4.
Whitfieldella lævis Grabau, Bull. Geol. Soc. Amer., 1
4a-d; Bull. New York State Mus., 45, 1901, p. 2
Soc. Nat. Sci., 7, 1901, p. 204, fig. 130.
Helderbergian: Albany and Schoharie Counties, N
Maine; New Brunswick; Erie County, New York (

Whitfieldella lara (Billings).
Athyris lara Billings, Catalogue Sil. Foss. Anticosti, 1
Atrypa lara Davidson, Suppl. British Sil. Brach., Pal.
chert, Bull. U. S. Geol. Surv., 87, 1897, p. 152.
Anticostian (Gun River and Jupiter River): Gull Cape

Whitfieldella(?) minuta Maynard.
Whitfieldella(?) minuta Maynard, Maryland Geol. Surv
pl. 78, figs. 41, 42.
Helderbergian (Keyser): Devil's Backbone and Round

Whitfieldella(?) naviformis (Hall).
Atrypa naviformis Hall, Geol. New York, Rep. 4th Di
New York, 2, 1852, p. 76, pl. 24, fig. 1.—Nicholson
Sci., n. s., 16, 1874, pp. 144, 157.—Owen, Amer.
p. 303, fig. 3.—Lesley, Geol. Surv. Pennsylvania,
Meristella naviformis Hall, 12th Rep. New York State C
Athyris naviformis Billings, Geol. Canada, 1863, p. 317,
Prov. Ontario, 1875, p. 62, fig. 32E.
Whitfieldella naviformis Hall and Clarke, Pal. New Y
pl. 40, fig. 3.—Lesley, Geol. Surv. Pennsylvania, R
Clinton (Irondequoit): Sodus, Rochester, etc., New Yo

Whitfieldella nitida (Hall).
Atrypa nitida Hall, Geol. New York, Rep. 4th Dist.,
fig. 5; Pal. New York, 2, 1852, p. 268, pl. 55, fig. 1.
Geol., 1, 1856, p. 137, pl. 2, fig. 9.
Merista nitida Hall, 12th Rep. New York State Cab.
Safford, Geol. Tennessee, 1869, p. 315, fig.
Athyris nitida Hall, Geol. Canada, 1863, p. 317, fig. 334
Meristella nitida Hall, Trans. Albany Inst., 4, 1863,
British Sil. Brach., 1867, p. 114, pl. 10, figs. 28-32.
Meristina nitida Hall, Pal. New York, 4, 1867, p. 299;
Mus. Nat. Hist., 1879, p. 169, pl. 25, figs. 1-7; 11th
1882, p. 300, pl. 25, figs. 1-7.—Nettelroth, Kent

Whitfieldella nitida—Continued.

Kentucky Geol. Surv., 1889, p. 102, pl. 33, figs. 10, 11.—Beecher and Clarke, Mem. New York State Mus., 1, 1889, p. 70, pl. 7, figs. 6–10.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 396, figs.—Miller, N. A. Geol. Pal., 1889, p. 354, fig. 584.

Whitfieldella nitida Hall and Clarke, Pal. New York, 8, pt. 2, 1893, p. 59, figs. 43, 44; pl. 40, figs. 4–13.—Grabau, Bull. New York State Mus., 45, 1901, p. 202, fig. 123; Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 202, fig. 123.—Clarke and Ruedemann, Mem. New York State Mus., 5, 1903, p. 44, pl. 4, figs. 32–37.—Grabau, Bull. New York State Mus., 69, 1903, p. 1051, fig. 10.—Kindle and Breger, 28th Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1904, p. 444, pl. 9, figs. 13, 14.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 347, figs. 447–448.—Foerste, Cincinnati Soc. Nat. Hist., Jour., 21, 1909, p. 19.

Niagaran: Lockport, etc., New York; Ontario (Rochester); Waldron, Indiana (Waldron); Louisville, etc., Kentucky (Louisville); Tennessee.

Plesiotype.—Cat. No. 51332, U.S.N.M. (Nettelroth).

WHITFIELDELLA NITIDA var. OBLATA Grabau. See Whitfieldella oblata.

Whitfieldella nitida oblata (Hall).

Atrypa nitida var. oblata Hall, Pal. New York, 2, 1852, p. 269, pl. 55, fig. 2.

Merista nitida var. oblata Hall, 12th Rep. New York State Cab. Nat. Hist., 1859, p. 78.

Whitfieldella nitida var. oblata Grabau, Bull. New York State Mus., 45, 1901, p. 202, fig. 124; Buffalo Soc. Nat. Sci., 7, 1901, p. 202, fig. 124.

Clinton (Rochester): Lockport, etc., New York; Hamilton, etc., Ontario.

Whitfieldella(?) nucleolata (Hall).

Atrypa nucleolata Hall, Pal. New York, 2, 1852, p. 328, pl. 74, figs. 10a–m.

Merista nucleolata Hall, 12th Rep. New York State Cab. Nat. Hist., 1859, p. 78.

Meristella nucleolata Whitfield, Geol. Wisconsin, 4, 1882, p. 321, pl. 25, fig. 5.

Whitfieldella(?) nucleolata Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 461; Amer. Geol., 31, 1903, p. 166.—Weller, Geol. Surv. New Jersey, Pal., 3, 1903, p. 241, pl. 21, figs. 38–40.—Shimer, Bull. New York State Mus., 80, 1905, p. 254.—Grabau, Bull. New York State Mus., 92, 1906, p. 109, fig. 12.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 348, fig. 449.—Grabau, Michigan Geol. Surv., Geol. Ser., 1, 1909, p. 151, pl. 32, figs. 3a–b.—Maynard, Maryland Geol. Surv., Low. Dev., 1913, p. 441, pl. 73, figs. 37–40.

Whitfieldella cf. rotundata Grabau, Bull. Geol. Soc. Amer., 11, 1900, p. 68, pl. 22, figs. 3a, b.

Cayugan: Schoharie and Litchfield, New York (Cobleskill); Akron, New York (Akron).

Helderbergian: Keyser, West Virginia (Keyser); New Jersey.

Whitfieldella oblata (Hall).

Atrypa oblata Hall, Pal. New York, 2, 1852, p. 9, pl. 4, figs. 4, 5.

Merista oblata Hall, 12th Rep. New York State Cab. Nat. Hist., 1859, p. 78.

Whitfieldella(?) oblata Hall and Clarke, Pal. New York, 8, pt. 2, 1893, p. 60.—Grabau, Bull New York State Mus., 45, 1901, p. 203, fig. 125; Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 203, fig. 125.

Upper Medinan: Lockport and Niagara, New York.

Whitfieldella ovoides Savage.

Meristella? sp. Meek and Worthen, Geol. Surv. Illinois, 3, 1868, p. 354, pl. 6, figs. 4a, b.

Whitfieldella ovoides—Continued.

Whitfieldella ovoides Savage, Bull. Geol. Surv. Illinois, 23, 1913, p. 90, pl. 5, figs. 13–15; pl. 7, fig. 13.

Upper Medinan: Near Thebes, Illinois, and Edgewood, Louisiana, etc., Missouri (Edgewood); Will County, Illinois (Channahon).

Whitfieldella prosseri Grabau.

Meristella lævis Whitfield (not Hall, 1859), Ann. New York Acad. Sci., 5, 1891, p. 510, pl. 5, figs. 6, 7; Ohio Pal., 7, 1893, p. 411, pl. 1, fig. 6.—Sherzer, Michigan Geol. Surv., 7, 1900, p. 223, pl. 17, figs. 6, 7.

Whitfieldella prosseri Grabau, Michigan Geol. Surv., Geol. Ser., 1, 1909, p. 152, pl. 21, figs. 3, 8, 9, 12–13; pl. 30, figs. 6–7.—Maynard, Maryland Geol. Surv., Low. Dev., 1913, p. 439, pl. 78, figs. 34–36.

Upper Monroan (Raisin River): Monroe County, Michigan; Lucas County, Ohio.

Helderbergian (Keyser): Cherry Run, West Virginia.

Whitfieldella quadrangularis Foerste.

Whitfieldella quadrangularis Foerste, Bull. Kentucky Geol. Surv., 7, 1906, p. 327, pl. 1, figs. 4a–c.

Clinton (Indian Fields): Near Duncansville, Adams County, Ohio.

Whitfieldella rotundata (Whitfield).

Nucleospira rotundata Whitfield, Ann. New York Acad. Sci., 2, 1882, p. 194; ibid., 5, 1891, p. 511, figs. 11–14; Geol. Ohio, 7, 1895, p. 413, pl. 1, figs. 11-14.—Sherzer, Michigan Geol. Surv., 7, 1900, pt. 1, p. 223, pl. 17, figs. 11-14.

Whitfieldella rotundata Grabau, Bull. New York State Mus., 45, 1901, p. 204, fig. 129; Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 204, fig. 129.

Whitfieldella cf. rotundata Grabau, Bull. Geol. Soc. Amer., 11, 1900, p. 368, pl. 22, figs. 3a–b.

Monroan: Greenfield, Ohio; Monroe County, Michigan; Erie County, New York.

Whitfieldella? solitaria (Billings).

Athyris solitaria Billings, Catalogue Sil. Foss. Anticosti, 1866, p. 48.

Anticostian (Gun River, Jupiter River): Southwest Point, Anticosti.

Whitfieldella? speciosa Savage.

Whitfieldella? speciosa Savage, Bull. Geol. Surv. Illinois, 23, 1913, p. 91, pl. 5, figs. 16, 17.

Upper Medinan (Edgewood-Noix): Near Louisiana and south of Clarksville, Missouri; Hamburg, Illinois.

Whitfieldella subquadrata Foerste.

Whitfieldella subquadrata Foerste, Bull. Kentucky Geol. Surv., 7, 1906, p. 326, pl. 1, figs. 3a–f.

Clinton (Indian Fields): Four miles west of Berea, Kentucky.

Whitfieldella subsulcata Grabau.

Whitfieldella subsulcata Grabau, Geol. Surv. Michigan, Geol. Ser., 1, 1909, p. 155, pl. 32, figs. 4a–d.

Whitfieldella cf. laevis Grabau, Bull. Geol. Soc. Amer., 11, 1900, pp. 369–370, pl. 22, fig. 4a–d; Bull. 45, New York State Mus., Nat. Hist., 1901, p. 204, fig. 130.

Cayugan (Akron): Buffalo, Akron, and Williamsville, New York.

Lower Monroan (Greenfield): Greenfield and Ballville, Ohio.

Whitfieldella sulcata (Vanuxem).

Atrypa sulcata Vanuxem, Geol. New York Rep., 3d Dist., 1842, p. 112, fig. 5.—Hall, Geol. New York, 1, 1843, p. 349, fig. 5.—Owen, Amer. Jour. Sci. Arts, 2d ser., 1, 1846, p. 47, fig. 5.—Emmons, Man. Geol., 1860, p. 113, fig. 102.

Whitfieldella sulcata—Continued.

Merista sulcata Miller, Amer. Pal. Foss., 1877, p. 115.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 392, figs.

Whitfieldella sulcata Grabau, Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 204, fig. 128; Bull. Geol. Soc. Amer., 11, 1900, p. 367, pl. 22, figs. 2a–d; Bull. New York State Mus., 45, 1901, p. 204, fig. 128.—Schuchert, Amer. Geol., 31, 1903, p. 167.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 348, fig. 450.—Grabau, Michigan Geol. Surv., Geol. Ser., 1, 1909, p. 156, pl. 32, figs. 2a–d.

Merista bisulcata Hall, Pal. New York, 3, 1859, p. 253.

Cayugan: Vienna, etc., eastern New York (Manlius); Buffalo, etc., western New York (Akron).

WHITFIELDIA Davidson. See Meristina Hall.

WHITFIELDIA NAVIFORMIS Lesley. See Whitfieldella(?) naviformis.

WILSONIA Kayser. Genotype: Terebratula wilsoni Sowerby.

Wilsonia Kayser, Zeitschr. d. d. geol. Gesselsch., 23, 1871, p. 502.—Hall and Clarke, Pal. New York, 8, pt. 2, 1893, p. 195; 13th Rep. New York State Geol., 1895, p. 827.—Koken, Die Leitfossilien, Leipzig, 1896, p. 245, fig. 207.—Williams, Bull. U. S. Geol. Surv., 165, 1900, p. 60.—Schuchert, Zittel-Eastman Textb. Pal., 1900, p. 324; ibid., 2d ed., 1913, p. 398.

Uncinulina Bayle, Explic. de la Carte Geol. France, 4, Atlas, 1878, pl. 13, figs. 13–16.

Wilsonia globosa Weller.

Wilsonia globosa Weller, Geol. Surv. New Jersey, Pal., 3, 1903, p. 235, pl. 21, figs. 12–22.—Maynard, Maryland Geol. Surv., Low. Dev., 1913, p. 369, pl. 65, figs. 15–17.

Helderbergian: Two miles south Tri States, New York (Decker Ferry); Cumberland, Cash Valley, Maryland (Keyser).

Wilsonia kokomoensis (Miller).

Rhynchonella kokomoensis Miller, 18th Ann. Rep. Geol. Surv. Indiana, 1894, p. 312, pl. 9, figs. 22–24 (adv. sheets, 1892, p. 58).

Wilsonia kokomoensis Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 462.—Foerste, Cincinnati Soc. Nat. Hist., Jour., 21, p. 13.

Cayugan (Kokomo): Kokomo, Indiana.

Wilsonia saffordi (Hall).

Rhynchonella saffordi Hall, Canadian Nat. Geol., 5, 1860, p. 146.—Hall and Whitfield, 27th Rep. New York State Cab. Nat. Hist., 1875, pl. 9, figs. 27–29.—Dawson, Acadian Geol., 3d ed., 1878, p. 598.—Nettelroth, Kentucky Foss. Shells, Mem. Kentucky Geol. Surv., 1889, p. 79, pl. 27, figs. 22–24; pl. 33, figs. 4–6.

Wilsonia saffordi Hall and Clarke, Pal. New York, 8, pt. 2, 1893, p. 198, pl. 58, figs. 5–14.—Foerste, Jour. Geol., 11, 1903, p. 710 (loc. occ.).—Kindle and Breger, 28th Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1904, p. 439, pl. 8, figs. 4–9.—Foerste, Bull. Denison Univ., Sci. Lab., 14, 1909, pl. 3, fig. 49.

Niagaran: Perry County, etc., Tennessee (Brownsport); Louisville, Kentucky (Louisville); Georgetown and Bunker Hill, Indiana.

Plesiotype.—Cat. No. 51350, U.S.N.M. (Nettelroth).

Wilsonia saffordi depressa (Nettelroth).

Rhynchonella saffordi var. depressa Nettelroth, Mem. Kentucky Fossil Shells, Kentucky Geol. Surv., 1889, p. 80, pl. 33, figs. 1–3.

Niagaran (Louisville): Louisville, Kentucky.

Holotype.—Cat. No. 51316, U.S.N.M.

Wilsonia wilsoni (Sowerby).

Terebratula wilsoni Sowerby, Mineral Conch., 1818, p. 118, fig. 3.

Rhynchonella wilsoni Roemer, Sil. Fauna West Tennessee, 1860, p. 71, pl. 5, fig. 13.

Wilsonia wilsoni Hall and Clarke, Pal. New York, 8, pt. 2, 1893, p. 198.—Schuchert, Bull. U. S. Geol. Surv., 273, 1897, p. 462.

Middle Silurian: Europe; Decatur County, Tennessee; Louisville, Kentucky; Lake Temiscouata, New Brunswick.

WINGIA Seely. Genotype: W. congregata Seely.

Wingia Seely, Rep. Vermont State Geol., 5, 1906, p. 178.

Observation.—This genus and all of its species are based on the well-known intraformational (edgewise) conglomerates of the Beekmantown, some of which may be algal in origin.

Wingia congregata Seely.

Wingia congregata Seely, Rep. Vermont State Geol., 5, 1906, p. 178, pl. 39.

Canadian (Beekmantown): Shoreham, Fort Cassin, etc., Vermont.

Wingia discoidea Seely.

Wingia discoidea Seely, Rep. Vermont State Geol., 5, 1906, p. 179, pl. 39.

Canadian (Beekmantown): Shoreham, etc., Vermont.

Wingia lapilla Seely.

Wingia lapilla Seely, Rep. Vermont State Geol., 5, 1906, p. 179, pl. 40.

Canadian (Beekmantown): Shoreham, etc., Vermont.

XENOCRINUS Miller. Genotype: X. penicillus Miller.

Xenocrinus Miller, Jour. Cincinnati Soc. Nat. Hist., 4, 1881, p. 71.—Carpenter, Proc. Roy. Soc. London, 35, 1883, p. 139; Philadelphia Trans. Roy. Soc. London, 174, 1884, p. 925.—Wachsmuth and Springer, Amer. Jour. Sci., 25, 1883, p. 266; Proc. Acad. Nat. Sci. Philadelphia, 1885, p. 317; Rev. Pal., 3, p. 94.—Miller, N. A. Geol. Pal., 1889, p. 287.—Wachsmuth and Springer, Mem. Mus. Comp. Zool., Harvard., 20, 1897, p. 182.—J. F. James, Jour. Cincinnati Soc. Nat. Hist., 19, 1897, p. 106.—Bather, Treatise on Zool., pt. 3, Echinoderma, 1900, p. 165, fig. 78, 3.—Wachsmuth, Zittel-Eastman Textb. Pal., 1, 1900, p. 145.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 715.—Springer, Zittel-Eastman Textb. Pal., 2d ed., 1913, p. 193.

Xenocrinus baeri (Meek).

Glyptocrinus Baeri Meek, Amer. Jour. Sci., 3d ser., 3, 1872, p. 260; Geol. Surv. Ohio, Pal., 1, 1873, p. 37, pl. 2, figs. 1a, b.—Miller, Jour. Cincinnati Soc. Nat. Hist., 3, 1880, p. 234, pl. 7, figs. 3, 4; ibid., 6, 1883, p. 226.—James, ibid., 8, 1885, p. 71.—Dyche, ibid., 15, 1892, p. 101; Amer. Geol., 10, 1892, p. 130; Science, 20, 1892, p. 66.

Reteocrinus Baeri Wachsmuth and Springer, Amer. Jour. Sci., 25, 1883, p. 266.

Xenocrinus Baeri Wachsmuth and Springer, Proc. Acad. Nat. Sci. Philadelphia, 1885, pp. 316–318 (Rev. Pal., pt. 3, sec. 1, pp. 94, 95, 96); Mem. Mus. Comp. Zool., Harvard, 20, 1897, p. 185, pl. 9, figs. 5a–d.—James, Jour. Cincinnati Soc. Nat. Hist., 19, 1897, p. 108.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 734, pl. 4, figs. 1, 1a.

Richmond (Liberty): Richmond, Indiana; Waynesville, Ohio.

Plesiotypes.—Cat. No. 40761, U.S.N.M.

ocrinus penicillus Miller.

enocrinus penicillus Miller, Jour. Cincinnati Soc. Nat. Hist., 4, 1881, p. 72, pl. 1, figs. 3a–c; p. 176, pl. 4, fig. 6.—Carpenter, Philadelphia Trans. Royal Soc., London, 174, 1884, p. 924, pl. 71, fig. 8.—Miller, N. A. Geol. Pal., 1889, p. 287, fig. 444.—James, Jour. Cincinnati Soc. Nat. Hist., 19, 1897, p. 107.—Wachsmuth and Springer, Mem. Mus. Comp. Zool., Harvard, 20, 1897, p. 183, pl. 9, figs. 6a, b.

ichmond (Liberty): Waynesville, Ohio.

otype and *plesiotypes*.—Cat. No. 40758, U.S.N.M.

OPHORA TRIGONOSTOMA Whitfield. See Diaphorostoma trigonostoma.

HRENTIS Rafinesque.

Genotype: Z. phrygia Rafinesque and Clifford=Z. cornicula Leseur.

aphrentis Rafinesque, Ann. d. Sci. Phys. Bruxelles, 5, 1820, p. 234.—Edwards and Haime, Mon. d. Polyp. Foss. d. Terr. Pal., 1851 (Arch. du. Mus. d'Hist. Nat., 5), p. 164, 326.—Pictet, Traite de Pal., 2d ed., 4, 1857, p. 452.—Billings, Canadian Nat. Geol., 3, 1858, p. 428; Geol. Surv. Canada, Rep. Progr. for 1857, 1858, p. 176; Canadian Jour., n. s., 4, 1859, p. 119.—Milne-Edwards, Hist. Nat. d. Corall., 3, 1860, p. 335.—Ludwig, Paleontographica, 10, 1862, p. 204; ibid., 14, 1865, p. 144, pl. 31, figs. 10, 13.—Koninck, Animaux Foss. Terr. Carb. Belgique (Mem. l'Acad. Royale Sci. de Belgique, 39), 1872, p. 80; ibid., pt. 2, 1873, p. 8.—Dybowski, Archiv. f. Natur. Liv-, Ehst-und Kurl., 5, 1873, p. 335.—Nicholson, Rep. Pal. Prov. Ontario, pt. 1, 1874, p. 21.—Thomson and Nicholson, Ann. Mag. Nat. Hist., 4th ser., 16, 1875, p. 426.—Rominger, Geol. Surv. Michigan, 3, pt. 2, 1876, p. 140.—Nicholson and Etheridge, Mon. Sil. Foss., Girvan Dist., 1878, pp. 69–70.—Zittel, Handb. Pal., 1, 1879, p. 228.—Thomson, Proc. Phil. Soc. Glasgow, 13, 1881, p. 216, fig. 4; ibid., 14, 1883, p. 364.—Barrois, Rech. Terr. Anciens Asturies and Galice (Mem. Soc. Geol. Nord, 2), 1882, p. 300.—Roemer, Leth. geog., pt. 1, Leth. Pal., 1883, p. 362.—Hall and Simpson, Pal. New York, 6, 1887, p. 11.—Barrois, Mem. Soc. Geol. du Nord, 3, Lille, 1889, p. 52; Mem. Soc. Agric. et Arts Lille, 4th ser., 17, 1889, p. 52.—Miller, N. A. Geol. Pal., 1889, p. 208.—Sherzer, Amer. Geol., 7, 1891, pp. 284–289.—James, Jour. Cincinnati Soc. Nat. Hist., 15, pt. 4, 1893, p. 144.—Koken, Die Leitfossilien, Leipzig, 1896, p. 308.—Miller, N. A. Geol. Pal., 2d App., 1897, p. 729.—Grabau, Bull. Buffalo Soc. Nat. Sci., 6, 1899, p. 123; ibid., 7, p. 137.—Lambe, Cont. Can. Pal., Geol. Surv. Canada, 4, pt. 2, 1901, p. 118.—Grabau, Bull. New York State Mus., 45, 1901, p. 137.—Grabau and Shimer, N. A. Index Fossils, 1, 1906, p. 56.—Zittel-Eastman Textb. Pal., 1, 1900, p. 75; 2d ed., 1913, p. 83.

aninia Michelin, Atti della riunione degli Scienzati italiani in Torino, 1841.—Dana, Wilkes's U. S. Expl. Exped., 1838–1842, 7, Zoophytes, 1846, p. 358; Amer. Jour. Sci. Arts, 2d ser., 1, 1846, p. 184.—D'Orbigny, Prodr. de Pal., 1, 1849, p. 105.—McCoy, British Pal. Rocks Foss., 1854, p. 28.—Dybowski, Archiv. natur. Liv-, Ehst-und Kurl., 5, 1873, p. 337.—Zittel, Handb. Pal., 1, 1879, p. 230,

olydilasma Hall, Amer. Jour. Sci. Arts, 2d ser., 11, 1851, p. 399; Pal. New York, 2, 1852, p. 112; 12th Rep. New York State Cab. Nat. Hist., 1859, p. 85.—Sherzer, Amer. Geol., 7, 1891, pp. 284–289. (Genotype: P. turbinatum Hall.)

rentis affinis Billings.

aphrentis affinis Billings, Canadian Nat. Geol., n. s., 2, 1865, p. 430; Cat. Sil. Foss. Anticosti Geol. Surv. Canada, 1866, pp. 7, 34.—Lambe, Cont. Canadian Pal., Geol. Surv. Canada, 4, pt. 2, 1901, p. 118, pl. 7, figs. 6, 6a, b.

fig. 2.

Upper Medinan: Will County, Illinois (Channahon); near
and Clarksville, Missouri (Edgewood).

ZAPHRENTIS BELLISTRIATA Billings. See Zaphrentis affinis.

ZAPHRENTIS BIGSBYI Billings. See Omphyma verrucosa.

Zaphrentis bilateralis (Hall).

Caninia bilateralis Hall, Pal. New York, 2, 1852, p. 41, pl
pl. 32, figs. 3a–c.

Zaphrentis bilateralis Hall, 12th Rep. New York State
p. 79 (gen. ref.).

Clinton: Reynale's Basin, Lockport, etc., New York.

Early Silurian: Reynale's Basin, Lockport, etc., New
Huron (Cataract).

ZAPHRENTIS CANADENSIS Billings. See Streptelasma rusticu

Zaphrentis celator Hall.

Zaphrentis celator Hall, 28th Rep. New York State Mus.
1875, 1877, pl. 5, figs. 5, 6; mus. ed., 1879, p. 107, pl.
Rep. Indiana Dep. Geol. Nat. Hist., 1882, p. 227, pl
Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1267, fig

Niagaran (Waldron): Waldron, Indiana.

Zaphrentis celator daytonensis (Foerste).

Cyathophyllum celator Daytonensis Foerste, Proc. Bost
1890, p. 339, pl. 9, figs. 9–11; Geol. Surv. Ohio., Pal.
figs. 9–11.

Alexandrian (Brassfield): Soldiers' Home, near Dayton, C

Zaphrentis charaxata Foerste.

Zaphrentis charaxata Foerste, Bull. Kentucky Geol. Surv
figs. 4a–e.

Clinton (Waco): Near Irvine and Panola, Kentucky.

ZAPHRENTIS CINCTOSA Billings. See Amplexus shumardi.

ZAPHRENTIS CONULUS Davis. See Streptelasma conulus.

Zaphrentis desori Edwards and Haime. Not recognized.
Zaphrentis desori Edwards and Haime, Mon. Polyp. Foss. Terr. Pal. (Arch. du Mus. Hist. Nat., 5), 1851, p. 333.
Silurian: Perry County, Tennessee.

ZAPHRENTIS INEQUALIS Hall. See Streptelasma divaricans?

Zaphrentis intertexta Foerste.
Zaphrentis intertexta Foerste, Bull. Kentucky Geol. Surv., 7, 1906, p. 307, pl. 7, figs. 1a, b.
Clinton (Waco): Near Irvine and Clay City, Kentucky.

Zaphrentis intertexta irvinensis Foerste.
Zaphrentis intertexta-irvinensis Foerste, Bull. Kentucky Geol. Surv., 7, 1906, p. 309, pl. 7, figs. 5A, B.
Clinton (Waco): Near Irvine, Kentucky.

Zaphrentis intertexta juvenis Foerste.
Zaphrentis intertexta-juvenis Foerste, Bull. Kentucky Geol. Surv., 7, 1906, p. 309, pl. 7, figs. 5C–D.
Clinton (Waco): Near Irvine, Kentucky.

Zaphrentis keyserensis Swartz.
Zaphrentis keyserensis Swartz, Maryland Geol. Surv., Low. Dev., 1913, p. 201, pl. 19, figs. 1–4.
Helderbergian (Keyser): Keyser, West Virginia.

Zaphrentis latisinus Hall.
Zaphrentis latisinus Hall, 35th Rep. New York State Mus. Nat. Hist., 1884, p. 414 (ext. 1882, p. 10).
Niagaran: Drummond Island, Lake Huron.

Zaphrentis marcoui Edwards and Haime.
Zaphrentis marcoui Edwards and Haime, Mon. d. Polyp. Foss. d. Terr. Pal. (Arch. du Mus. d'Hist. Nat., 5), 1851, p. 337.—Milne Edwards, Hist. Nat. d. Corall., 3, 1860, p. 344.
Clinton: Lockport, New York.

Zaphrentis obliqua Davis.
Zaphrentis obliqua Davis, Kentucky Fossil Corals, Geol. Surv. Kentucky, pt. 2, 1885, pl. 133, figs. 15–17.
Niagaran (Louisville?): Near Louisville, Kentucky.

Zaphrentis offleyensis Etheridge.
Zaphrentis offleyensis Etheridge, Quart. Jour. Geol. Soc. London, 34, 1878, p. 588, pl. 26, figs. 2, 2a.
Niagaran: Offley Island, Kennedy Channel, Arctic America.

Zaphrentis? ohioensis James.
Zaphrentis? ohioensis James, Paleontologist, No. 4, 1879, p. 26; Jour. Cincinnati Soc. Nat. Hist., 15, pt. 4, 1893, p. 145, fig. 8.
Maysville (Corryville): Cincinnati, Ohio.

Observation.—Not recognized. Possibly based upon the gastropod Dyeria costata.

Zaphrentis patens Billings.
Zaphrentis patens Billings, Canadian Nat. Geol., n. s., 2, 1865, p. 430; Cat. Sil. Foss. Anticosti, Geol. Surv. Canada, 1866, p. 33.—?Davis, Kentucky Fossil

Zaphrentis pressula Hall.
Zaphrentis pressula Hall, 35th Rep. New York State Mus. N
(ext. 1882, p. 10).
Niagaran: St. Charles, Illinois.

Zaphrentis racinensis Whitfield.
Zaphrentis Racinensis Whitfield, Ann. Rep. for 1879, W
1880, p. 65; Geol. Wisconsin, 4, 1882, p. 277, pl. 14, fig
Geol. Wisconsin, 1, 1883, p. 188, fig.
Zaphrentis cf. racinensis Clarke and Ruedemann, Mem. Ne
1903, p. 23, pl. 1, figs. 2, 3.
Niagaran: Racine and Wauwatosa, Wisconsin (Racine); S
New York (Guelph).

ZAPHRENTIS RADICANS Davis. See Streptelasma radicans.

ZAPHRENTIS RUSTICUS Billings. See Streptelasma rusticum.

Zaphrentis scutella Davis.
Zaphrentis scutella Davis, Kentucky Fossil Corals, Geol. S
1885, pl. 133, figs. 1-3.
Niagaran (Louisville): Near Louisville, Kentucky.

ZAPHRENTIS SHUMARDI Lambe. See Amplexus shumardi.

Zaphrentis socialis Davis.
Zaphrentis socialis Davis, Kentucky Fossil Corals, Geol. S
1885, pl. 133, figs. 7-9.
Niagaran: Near Brunerstown, Jefferson County, Kentucky.

ZAPHRENTIS SPONGIAXIS Davis. See Streptelasma spongiaxis.

Zaphrentis stokesi Edwards and Haime.
Zaphrentis stokesi Edwards and Haime, Mon. d. Polyp. Fos
du Mus. d'Hist. Nat., 5), 1851, p. 330, pl. 3, fig. 9.—Miln
d. Corall., 3, 1860, p. 337.—Billings, Geol. Canada, Geol
p. 308, fig. 311; Cat. Sil. Foss. Anticosti, Geol. Surv. C

Zaphrentis subregularis Savage.
Zaphrentis subregularis Savage, Bull. Geol. Surv. Illinois, 23, 1913, p. 62, pl. 3, fig. 5; pl. 7, fig. 1.
Upper Medinan: Pike County, Missouri (Edgewood); Will County, Illinois (Channohon).

Zaphrentis subvada Hall.
Zaphrentis subvada Hall, 35th Rep. New York State Mus. Nat. Hist., 1884, p. 415 (ext., 1882, p. 11).
Niagaran (Racine): Racine, Wisconsin.

Zaphrentis subvesicularis Hall.
Zaphrentis subvesicularis Hall, 35th Rep. New York State Mus. Nat. Hist., 1884, p. 414 (ext., 1882, p. 10).
Niagaran (Louisville?): Charlestown, Indiana.

Zaphrentis turbinata (Hall).
Polydilasma turbinatum Hall, Pal. New York, 2, 1852, p. 112, pl. 32, figs. 2a–i.
Zaphrentis? turbinatum Hall, 12th Rep. New York State Cab. Nat. Hist., 1859, p. 85 (gen. ref.).—Grabau, Bull. New York State Mus., 45, 1901, pp. 137, 138, fig. 30; Bull. Buffalo Soc. Nat. Sci., 7, 1901, p. 137, fig. 30.
Niagaran (Lockport): Lockport, New York.

Zaphrentis umbonata Rominger.
Zaphrentis umbonata Rominger, Geol. Surv. Michigan, 3, pt. 2, 1876, p. 146, pl. 51, lower tier.
Niagaran: Drummonds Island and Point Detour, Michigan; Louisville, Kentucky.

Zaphrentis unica Davis.
Zaphrentis unica Davis, Kentucky Foss. Corals, pt. 2, Geol. Surv. Kentucky, 1885, pl. 132, figs. 7–10.
Niagaran (Louisville): Louisville, Kentucky.

Zdimir Barrande. See Conchidium Linnaeus.

ZITTELELLA Ulrich and Everett. Genotype: Z. typicalis Ulrich and Everett.
Zittelella Ulrich and Everett, Geol. Surv. Illinois, 8, 1890, p. 267.—Ulrich and Everett in Miller, N. A. Geol. Pal., 1889, p. 167.

Zittelella inosculata Ulrich and Everett.
Zittelella inosculata Ulrich and Everett, Geol. Surv. Illinois, 8, 1890, p. 271, pl. 5, figs. 6, 6a.
Black River (Platteville): Near Dixon, Illinois.

Zittelella lobata Ulrich and Everett.
Zittelella lobata, Ulrich and Everett, Geol. Surv. Illinois, 8, 1890, p. 270, pl. 4, figs. 3a–c.
Black River (Platteville): Near Dixon, Illinois.
Figured sections of *cotype*.—Cat. No. 46575, U.S.N.M.

Zittelella trentonensis (Worthen).
Cnemidium? Trentonensis Worthen, Geol. Surv. Illinois, 6, 1875, pp. 491, 492, fig.
Palæospongia trentonensis Miller, N. A. Geol. Pal., 1889, p. 162, fig. 113.
Zittelella trentonensis Ulrich and Everett, Geol. Surv. Illinois, 8, 1890, p. 270.
Black River (Platteville): Near Dixon, Illinois.

Zittelella typicalis var. pistilliformis Ulrich and Everett,
1890, p. 269, pl. 5, fig. 4.
Black River (Platteville): Near Dixon, Illinois.

Zittelella typicalis subrotunda Ulrich and Everett.
Zittelella typicalis var. subrotunda Ulrich and Everett,
1890, p. 269, pl. 5, figs. 2, 2a.
Black River (Platteville): Near Dixon, Illinois.

Zittelella typicalis turbinata Ulrich and Everett.
Zittelella typicalis var. turbinata Ulrich and Everett,
1890, p. 269, pl. 5, figs. 7, 7a.
Black River (Platteville): Near Dixon, Illinois.

Zittelella varians (Billings).
Eospongia varians Billings, Geol. Vermont, 2, 1861, p. 95
etc., Vermont, 1862, p. 228; Pal. Foss., 1, Geol. Sur
(adv. sheets, 1861).
Zittelella varians Schuchert and Twenhofel, Bull. Geol.
p. 690.
Chazyan: Mingan Islands, Canada (Mingan); East Tennes

ZITTELOCERAS Hyatt. Genotype: Cyrto
Zitteloceras Hyatt, Proc. Boston Soc. Nat. Hist., 22, 1884,
Textb. Pal., 1, 1900, p. 522; 2d ed., 1913, p. 603.—Gra
Index Fossils, 2, 1910, p. 76.

Zitteloceras billingsi (Salter).
Cyrtoceras billingsi Salter, Geol. Surv. Canada, Canad.
1859, p. 33, pl. 7, fig. 6 (not 5=Zitteloceras hallianum
nesota, Pal., 3, pt. 2, 1897, p. 806, pl. 60, fig. 10.
Zitteloceras billingsi Grabau and Shimer, N. A. Index Fos
Black River: Allumette Island, Ottawa River, Canada (
Minnesota (Platteville); Lincoln County, Missouri (Au

Zitteloceras hallianum (D'Orbigny).
Cyrtoceras lamellosum Hall (not Verneuil, 1842), Pal. New

ZOPHOCRINUS Miller. Genotype: Z. howardi Miller.

Zophocrinus Miller, 17th Ann. Rep. Indiana Dep. Geol. Nat. Res., 1892, p. 642 (adv. sheets, 1891, p. 32); N. A. Geol. Pal., 1st App., 1892, p. 683.—Weller, Bull. Chicago Acad. Sci., Nat. Hist. Surv., 4, pt. 1, 1900, p. 152, fig. 57.—Bather, Treatise on Zool., pt. 3, Echinoderma, London, 1900, p. 151, fig. 63.—Slocom, Field Columbian Mus., 2, Geol. Ser., 1908, p. 284, fig. 5.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 474.—Springer, Zittel-Eastman Textb. Pal., 2d ed., 1913, p. 158.

Zophocrinus globosus Slocom.

Zophocrinus globosus Slocom, Field Columbian Mus., Geol. Ser., 2, 1908, p. 285, pl. 85, figs. 15–19.

Niagaran (Racine): Drainage Canal, near Lemont, Illinois.

Zophocrinus howardi Miller.

Zophocrinus howardi Miller, 17th Ann. Rep. Indiana Dep. Geol. Nat. Res., 1892, p. 643, pl. 6, figs. 26–28 (adv. sheets, 1891, p. 33); N. A. Geol. Pal., 1st App., 1892, p. 683, fig. 1254.—Weller, Bull. Chicago Acad. Sci., Nat. Hist. Surv., 4, pt. 1, 1900, p. 152, pl. 15, fig. 13.—Bather, Treatise on Zool., pt. 3, Echinoderma, London, 1900, p. 151, fig. 63.—Grabau and Shimer, N. A. Index Fossils, 2, 1910, p. 474, fig. 1785.

Niagaran: St. Paul, Minnesota (Laurel); Lemont, Illinois (Racine).

Zophocrinus pyriformis Slocom.

Zophocrinus pyriformis Slocom, Field Columbian Mus., Geol. Ser., 2, 1908, p. 285, pl. 85, figs. 12–14.

Niagaran (Racine): Romeo, Illinois.

ZYGOSPIRA Hall. Genotype: Atrypa modesta Hall.

Stenocisma Hall (not Conrad), Pal. New York, 1, 1847, p. 142.—Meek and Hayden, Pal. Upper Missouri, Smiths. Cont. to Knowl., 14, 1864, p. 16.

Zygospira Hall, 15th Rep. New York State Cab. Nat. Hist., 1862, p. 154, figs. 1–2.—Billings, Canadian Nat. Geol., 7, 1862, p. 393.—Hall, 20th Rep. New York State Cab. Nat. Hist., 1867, p. 267.—Meek, Geol. Surv. Illinois, 3, 1868, p. 377.—Miller, Cincinnati Quart. Jour. Sci., 2, 1875, p. 58.—Zittel, Handb. Pal., 1, 1880, p. 688.—Davidson, Suppl. British Sil. Brach., Pal. Soc., 1882, pp. 86, 119, 122.—Beecher, Amer. Jour. Sci., 3d ser., 44, 1892, p. 152.—Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 465.—Beecher and Schuchert, Biol. Soc. Washington, 8, 1893, pp. 71–82.—Hall and Clarke, Pal. New York, 8, pt. 2, 1893, p. 154.—Beecher, Bull. U. S. Geol. Surv., 87, 1897, pp. 110, 111.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 307.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 896.—Schuchert, Zittel-Eastman Textb. Pal., 1900, p. 333; 2d ed., 1913, p. 408.

Anazyga Davidson, Suppl. British Sil. Brach., Pal. Soc., 1882, p. 128.—Miller, N. A. Geol. Pal., 1889, p. 334. (Genotype: Atrypa recurvirostra Hall.)

Hallina Winchell and Schuchert, Prel. Desc. Amer. Geol., 9, 1892, pp. 291, 292.—Miller, N. A. Geol. Pal., 2d App., 1897, p. 760. (Genotype: H. saffordi Winchell and Schuchert.)

Protozyga Hall and Clarke, Pal. New York, 8, pt. 2, 1893, p. 151; 13th Ann. Rep. New York State Geol., 1895, pp. 809, 810, 812. (Genotype: Atrypa exigua Hall.)

Orthonomæa Hall, Note in Cont. Pal. New York, 1859 (not defined).—Hall and Clarke, 47th Rep. New York State Mus., 1894, p. 1008. (Genotype: O. erratica Hall.)

Zygospira(?) acutirostris Hall.

Atrypa acutirostra Hall, Pal. New York, 1847, 1, p. 21, pl. 4 bis, fig. 6.—Emmons Amer. Geology, 1, pt. 2, 1855, p. 192, pl. 3, fig. 27.

Rhynchonella acutirostris Hall, 12th Rep. New York State Cab. Nat. Hist., 1859, p. 65.

Zygospira(?) acutirostris Raymond, Ann. Carnegie Mus., 7, 1911, p. 227, pl. 34, figs. 15–22.

Chazyan (Day Point-Valcour): Valcour Island, Valcour, Chazy, and Crown Point, New York; Isle La Motte, Vermont.

ZYGOSPIRA ANTICOSTIENSIS Davidson. See Catazyga anticostiensis.

ZYGOSPIRA AQUILA Sardeson. See Zygospira nicolleti.

Zygospira cincinnatiensis Meek.

Zygospira cincinnatiensis James, Cat. Foss. Cincinnati Group, 1890, p. 11 (nom. nud.).—Meek, Pal. Ohio, 1, 1873, p. 126, pl. 11, fig. 5.—Miller, Cincinnati Quart. Jour. Sci., 2, 1875, p. 59.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1282, 2 figs.—Hall and Clarke, Pal. New York, 8, pt. 2, 1893, pl. 54, figs. 13, 14.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 945, pl. 36, figs. 9–9b.—Foerste, Bull. Sci. Lab. Denison Univ., 16, 1910, p. 30, pl. 6, figs. 16a, b.

Zygospira modesta var. cincinnatiensis Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 308.

Maysville (Mount Hope and Fairmount): Cincinnati, Ohio; Vevay, Indiana; north of Mason, Kentucky.

Zygospira concentrica Ulrich.

Zygospira concentrica Ulrich, Jour. Cincinnati Soc. Nat. Hist., 2, 1879, p. 14, pl. 7, fig. 10.

Maysville (Fairmount): Cincinnati, Ohio, and vicinity.

Zygospira deflecta (Hall).

Atrypa deflecta Hall, Pal. New York, 1, 1847, p. 140, pl. 33, fig. 4.—Emmons, Amer. Geology, 1, pt. 2, 1855, pl. 10, fig. 4.

Zygospira deflecta Hall and Clarke, Pal. New York, 8, pt. 2, 1893, p. 157.

Trenton: Lewis County, New York; Ottawa, Ontario.

Zygospira? erratica (Hall).

Orthis? erratica Hall, Pal. New York, 1, 1847, p. 288, pl. 79, fig. 5.

Zygospira erratica Davidson, Suppl. British Sil. Brach., Pal. Soc., 1882, p. 126.

Catazyga erratica Hall and Clarke, Pal. New York, 8, pt. 2, 1893, p. 158, pl. 54, figs. 17–23.—Foerste, Bull. Sci. Lab. Denison Univ., 17, 1914, p. 266.

Orthonomæa erratica Hall and Clarke, 47th Rep. New York State Mus., 1894, p. 1008.

Cincinnatian (Pulaski): Washingtonville, Pulaski, etc., New York; various localities east of Ottawa, Ontario.

Zygospira exigua (Hall).

Atrypa exigua Hall, Pal. New York, 1, 1847, p. 141, pl. 33, fig. 6.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 190, pl. 10, fig. 6.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 55, figs.

Genus? exigua Hall, 12th Rep. New York State Cab. Nat. Hist., 1859, p. 66.

Protozyga exigua Hall and Clarke, Pal. New York, 8, pt. 2, 1893, p. 149, figs. 137, 138; pl. 54, figs. 47, 48.

Zygospira exigua Schuchert, Bull. U. S. Geol. Surv., 87, 1897, p. 463.

Trenton: Lowville, Watertown, and Martinsburg, New York.

ZYGOSPIRA HEADI Hall. See Catazyga headi.

ZYGOSPIRA HEADI Meek. See Catazyga headi schuchertana.

Zygospira kentuckiensis James.
Zygospira modesta var. kentuckiensis James, Paleontologist, 1878, p. 7.
Zygospira kentuckiensis Nettelroth, Kentucky Fossil Shells, Mem. Kentucky Geol. Surv., 1889, p. 138, pl. 34, figs. 21-25.—Hall and Clarke, Pal. New York, 8, pt. 2, 1895, pl. 54, figs. 11, 15, 16.—Foerste, Amer. Geol., 31, 1903, p. 336 (loc. occ.).
Richmond (Waynesville): Oldham and Jefferson Counties, Kentucky.
Plesiotypes.—Cat. No. 51187, U.S.N.M. (Nettelroth).

Zygospira(?) mica (Billings).
Rhynchonella mica Billings, Cat. Sil. Foss. Anticosti, 1866, p. 44.
Zygospira? mica Hall and Clarke, Pal. New York, 8, pt. 2, 1893, p. 157.
Anticostian (Jupiter River): The Jumpers, Anticosti.

Zygospira(?) minima Hall.
Zygospira minima Hall, Desc. new species Foss. Waldron, Indiana, 1879, p. 14; 11th Rep. Indiana State Geol., 1882, p. 305, pl. 27, fig. 7; Trans. Albany Inst., 10, 1883, p. 70.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, p. 1283, fig.
Niagaran (Waldron): Waldron, Indiana.

Zygospira modesta Hall.
Atrypa modesta (Say) Hall, Pal. New York, 1, 1847, p. 141, pl. 15, fig. 15.—Emmons, Amer. Geology, 1860, 1, pt. 2, p. 192, pl. 10, fig. 15.—Hall, 13th Rep. New York State Cab. Nat. Hist., 1860, p. 69.
Zygospira modesta Hall, 15th Rep. New York State Cab. Nat. Hist., 1862, p. 154; 20th Rep., ibid., 1867, p. 267, fig. 12.—Meek, Pal. Ohio, 1, 1873, p. 125, pl. 11, fig. 4.—Miller, Cincinnati Quart. Jour. Sci., 2, 1875, p. 58.—Davidson, Geol. Mag., dec. 2, 8, 1881, p. 12, fig. 15.—Chamberlin, Geol. Wisconsin, 1, 1883, p. 174, fig.—Miller, N. A. Geol. Pal., 1889, p. 388, fig. 640.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1890, p. 1283, figs.—Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 467, pl. 34, figs. 42-44.—Hall and Clarke, Pal. New York, 8, pt. 2, 1893, p. 155, figs. 146-149; pl. 54, figs. 7-10, 12.—Keyes, Geol. Surv. Missouri, 5, 1895, p. 98.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 308, fig. 385f-i.—Cumings, 32d Ann. Rep. Dep. Geol. Nat. Res. Indiana, 1908, p. 946, pl. 36, figs. 8-8i.—Foerste, Bull. Sci. Lab. Denison Univ., 16, 1910, p. 29, pl. 2, fig. 15a-b.—Bassler, Bull. Virginia Geol. Surv., 2a, 1909, pl. 14, figs. 13-15.
Rhynchonella? modesta Billings, Geol. Canada, 1863, p. 211, fig. 211.
Eden-Richmond: Cincinnati, Ohio (Fairmount), and vicinity; Ohio; Kentucky; Indiana; Tennessee; Virginia; New York; Iowa, etc.

ZYGOSPIRA MODESTA var. CINCINNATIENSIS Grabau and Shimer. See Zygospira cincinnatiensis.

ZYGOSPIRA MODESTA var. KENTUCKIENSIS James. See Zygospira kentuckiensis.

Zygospira nicolleti Winchell and Schuchert.
Hallina nicolleti Winchell and Schuchert, American Geol., 9, April 1, 1892, p. 293; Geol. Minnesota, 3, 1893, p. 474, pl. 34, figs. 59-62.
Zygospira aquila Sardeson, Bull. Geol. Minnesota, 3, April 9, 1892, p. 335, pl. 4, figs. 15-18.

Zygospira nicolleti—Continued.

Zygospira nicolleti Beecher and Schuchert, Biol. Soc. Washington, 8, pt. 2, 1893, p. 71, pl. 10, fig. 23; pl. 11, figs. 11, 12.—Weller, Geol. Surv. New Jersey, Pal., 3, p. 161, pl. 10, figs. 27–30.—Grabau and Shimer, N. A. Index Fossils, 1, 1907, p. 308, fig. 386a–c.

Black River: Minneapolis, Rochester, and Fountain, Minnesota; Decorah, Iowa; Beloit, Wisconsin; Auburn, Missouri; New Jersey.

Zygospira obsoleta (Foerste).

Protozyga obsoleta Foerste, Jour. Cincinnati Soc. Nat. Hist., 21, 1914, p. 133, pl. 2, figs. 10a, b.

Trenton (Cynthiana): Near Millersburg, etc., Kentucky.

Zygospira paupera Billings.

Zygospira paupera Billings, Cat. Sil. Fossils Anticosti, 1866, p. 46.—Hall and Clarke, Pal. New York, 8, pt. 2, 1893, p. 157.

Anticostian (Gun River, Jupiter River): Near Jupiter River, etc., Anticosti.

ZYGOSPIRA PUTILLA Hall and Clarke. See Atrypa putilla.

Zygospira recurvirostris (Hall).

Atrypa recurvirostris Hall, Pal. New York, 1, 1847, p. 140, pl. 33, fig. 5.—Emmons, Amer. Geology, 1, pt. 2, 1855, p. 191, pl. 10, fig. 5.

Rhynchonella recurvirostris Billings, Geol. Canada, 1863, p. 168, fig. 152.—Lesley, Geol. Surv. Pennsylvania, Rep. P 4, 1889, p. 899, figs.

Anazyga recurvirostra Davidson, Suppl. British Sil. Brach., Pal. Soc., 1892, p. 219.

Zygospira recurvirostra Chamberlin, Geol. Wisconsin, 1, 1883, p. 155, fig.—Winchell and Schuchert, Geol. Minnesota, 3, 1893, p. 466, pl. 34, figs. 38–41.—Beecher and Schuchert, Biol. Soc. Washington, 8, 1893, p. 71, pl. 10. figs. 7–21; pl. 11, figs. 1–10.—Hall and Clarke, Pal. New York, 8, pt. 2, 1895, pl. 54, figs. 1–6.—Whiteaves, Geol. Surv. Canada, Pal. Foss., 3, pt. 3, 1897, p. 180.—Beecher, Bull. U. S. Geol. Surv., 87, 1897, p. 111, fig. 6.—Ruedemann, Bull. New York State Mus., 49, 1902, p. 27.—Weller, Geol. Surv. New Jersey, Pal., 3, 1903, p. 161, pl. 10, figs. 23–26.—Grabau and Shirmer, N. A. Index Fossils, 1, 1907, p. 307, fig. 385a–e.—Bassler, Bull. Virginia Geol. Surv., 2a, 1909, pl. 7, figs. 4, 5.—Foerste, Jour. Cincinnati Soc. Nat. Hist., 21, 1914, p. 132, pl. 1, fig. 2.

Black River, Trenton: Martinsburg, etc., New York; Kentucky; Iowa; Minnesota; Wisconsin; Ontario; Manitoba, etc.

Zygospira saffordi Winchell and Schuchert.

Hallina saffordi Winchell and Schuchert, Amer. Geol., 9, 1892, p. 292; Geol. Minnesota, 3, 1893, p. 473, pl. 34, figs. 55–58.—Hall and Clarke, Pal. New York, 8, pt. 2, 1895, pl. 83, figs. 36–38.

Zygospira saffordi Beecher and Schuchert, Biol. Soc. Washington, 8, 1893, p. 71, pl. 10, fig. 22; pl. 11, figs. 13, 13a.—Hall and Clarke, Pal. New York, 8, pt. 2, 1893, p. 151, figs. 139–141.

Stones River (Lebanon): Lebanon, Tennessee.

ZYGOSPIRA UPHAMI Winchell and Schuchert. See Catazyga uphami.

INDEX OF SPECIFIC NAMES.

The following index shows the specific and varietal names employed for American Ordovician and Silurian fossils and indicates the genera or combinations under which each has been used.

abbreviata—Calymene, Cyrtospira, Leperditia hisingeri, Lophospira uniangulata, Murchisonia, Murchisonia uniangulata, Ruedemannia, Subulites.
abdita—Ophileta.
abnormalis—Pseudocrinites.
abnormis (e)—Actinoceras, Æchmina, Clonograptus, Dichograptus, Graptolithus, Graptolithus (Monoprion), Holocystites, Lophospira, Orthoceras.
aboynensis—Illænus.
abruptus (a, um)—Bathyurellus, Colpomya, Corynotrypa, Ctenodonta, Cyrtoceras, Gyroceras, Liospira, Oncoceras, Orthoceras, Paleopupa, Pleurotomaria, Sœrichnites, Tellinomya, Vanuxemia.
absimilis—Ctenodonta, Tellinomya.
acadiæ—Rhynchospira, Trematospira.
acadicus (a, um)—Agnostus, Ctenopyge, Cyathaspis, Dictyonema flabelliforme Diplaspis, Grammysia, Pteraspis.
acadiensis—Crania, Helopora fragilis
acamas—Bronteus, Goldius.
acanthinus—Callicrinus.
acanthonotus—Tetragrapsus.
acanthoptera—Stropheodonta, Strophomena.
acanthura—Protopeltura.
accelerans—Eurystomites.
acceleratum—Cycloceras inceptum, Orthoceras inceptum.
accola—Eunoa.
acervulosa—Cyphotrypa, Leptotrypa.
achates—Dalmanites, Pterygometopus.
aciculatus (a)—Arabellites, Murchisonia.
acinacellum—Cyrtoceras.
acinus—Camarotœchia, Rhynchonella.
acmea (um)—Fenestella, Semicoscinium.
acrea—Murchisonia, Turritoma.
aculeatus—Ceratiocaris, Cladopora, Dimerocrinus, Diplograptus, Hormotoma, Loxonema, Rhodocrinus (Thysanocrinus).
acuminatus (a, um)—Ceratiocaris, Dawsonia, Escharopora, Glossina, Laccophyllum, Lingula, Lingulella, Lingulepis, Lophospira, Lyrodesma, Maclurea, Maclurites, Murchisonia, Obolus, Orthis, Physetomya, Platystrophia, Ptilodictya, Trimerella, Whitfieldella.
acuta—Carinaropsis, Maclurina manitobensis, Pachydictya, Ptilodictya, Raphistoma, Stictopora, Strophomena, Strophomena neglecta.
acuticaudatus—Pterygotus.
acutidens—Didymograptus.
acutilirata—Delthyris, Orthis biforata, Platystrophia.
acutilobus (a)—Bilobites, Orthis.
acutiplicata—Orthis.
acutirostra—Ambonychia, Atrypa, Mytilarca.
acutirostris—Ambonychia, Byssonychia, Lingula, Rhynchonella, Zygospira.
acutumbona—Cypricardites, Cyrtodonta, Vanuxemia, Whitella.
acutus (um)—Bathyurus, Bellerophon, Bellerophon bilobatus, Cyrtolites, Diplograptus, Diplograptus foliaceus, Graptolithus, Oxydiscus, Sinuites cancellata, Tryblidium.
ada—Murchisonia, Turritoma.
adelina—Ectomaria, Murchisonia, Solenospira.
adherens—Stenopora.
adipatus—Holocystites.
adrastica—Modiolopsis.
adscendens—Clitambonites, Orthisina.
ædilis—Cladopora, Eridotrypa, Monticulipora.
æmulus—Cyathocrinus (Poteriocrinus), Homocrinus.
æneas—Trochoceras.
æqualis (e)—Eurychilina, Lingula, Melocrinus, Monotrypella, Monticulipora, Orthoceras, Orthoceratites, Primitia.

æquilatera—Beyrichia, Leperditella, Leperditia.

æquiradiata—Camarotœchia, Protorhyncha, Rhynchonella.

æquivalvis—Orthis, Plectorthis.

affinis (e)—Agnostus pisiformis, Ambonychia, Amplexopora, Atrypa, Calathium, Cypricardites, Cyrtodonta, Dicellocephalus, Didymograptus, Dikelocephalus, Heliolites, Heterotrypa, Holocystites, Lesueurilla, Lichenocrinus, Lingulella, Lingulobolus, Liospira, Lyellia, Maclurea, Maclurites, Modiolopsis, Monticulipora, Nileus, Obolus, Orthodesma, Platycolpus, Prasopora, Propora, Ptychoparia (Euloma), Raphistoma, Remopleurides, Scenella, Schmidtella, Thamnograptus, Zaphrentis.

agarista—Pleurotomaria.

agassizi—Anisophyllum.

agave—Pleurotomaria.

agellus—Ceramopora.

agglomeratiformis—Halysites.

agglomeratus (a, um)—Catenipora, Cyathophyllum, Halysites, Rhynchonella.

agilis—Hormotoma, Murchisonia.

aiens—Pleurotomaria.

ainsliei—Rhynchonella, Rhynchotrema.

alabamaensis—Dicellograptus moffatensis, Diplograptus foliaceus, Leptæna transversalis, Plectambonites transversalis.

alacer—Asaphus, Brachyaspis, Isotelus.

alaricus—Proetus.

alatus (a)—Ambonychia, Anomalodonta, Avicula, Ctenobolbina, Cypricardia, Cyrtodonta, Euomphalus, Euomphalopterus, Eurymya, Leptoplastus, Megaptera, Modiolopsis, Olenus, Orthis, Posidonia, Posidonomya, Protograptus, Sphærophthalmus, Tetragrapsus, Tetragraptus (Graptolithus), Trilobites.

albaniensis—Eopolychætus.

albersi—Crania, Orthoceras.

albertina—Ctenodonta.

albionensis—Polypora, Polypora (Fenestella).

alceste—Metoptoma.

alceus—Oncoceras.

alcicornis—Bythopora, Clathropora, Stigmatella.

alcyone—Pachydictya, Ptilodictya.

alethes—Cyrtoceras.

alexandra—Murchisonia, Omospira, Ormospira.

alienum—Orthoceras.

allani—Lingulella.

alleghaniensis—Arthrophycus, Fucoides.

allegoricus—Bellerophon.

alleni—Calceocrinus, Deltacrinus.

allumettense — Actinoceras, Loxoceras, Orthoceras.

alpha—Asaphus.

alpheus—Tremanotus, Trematonotus.

alternans—Orthis, Protichnites.

alternatus (a, um)—Caryocystites, Ceramopora, Cœloclema, Conchopeltis, Crania, Cyathocrinus, Dendrocrinus, Heliophrentis, Helopora, Holocystis, Holocystites, Homocrinus, Leptæna, Monticulipora (Fistulipora), Nematopora, Oriostoma huntingtonensis, Poteriocrinus, Rafinesquina, Strophomena.

alterniradiata—Schuchertella, Strophomena.

alternistriata — Leptæna, Strophomena, Strophomena alternata, Rafinesquina.

altidorsata—Fenestella (Cycloporina).

altilis—Brachyaspis, Rhynchonella.

altirostris—Calymene.

altissimus (a)—Clitambonites americanus, Clitambonites diversa.

altisulcatum—Eunema, Trochonema.

altoides—Leperditia.

alturensis—Ophileta.

altus (a, um)—Actrotreta idahoensis, Callograptus minutus, Ctenodonta, Cyclora, Cytherina, Graptolithus, Homotrypa, Leperditia, Metoptoma, Modiomorpha, Reticularia (Prosserella) subtransversa, Scenella, Tellinomya, Trochonema.

alveata—Cuneamya, Hebertella.

alveolaris—Favistella, Favosites.

alveolatus (a, um)—Byssonychia, Columnaria, Reteocrinus, Retiocrinus.

amator—Oncoceras.

amazonica—Conularia, Orthis callactis.

ambiguus (a)—Atrypa, Billingsia, Camarella, Elkania, Fenestella, Hindella, Illænus, Isotrypa, Loculipora, Obolella, Pleurotomaria, Sagenella, Triplesia, Zaphrentis.

americanus (a, um)—Acacocrinus, Agnostus, Ampyx, Aphetoceras, Arethusina, Barrandeoceras, Bolboporites, Calceola, Clidochirus, Clitambonites, Cœlaster,

americanus—Continued.
Crotalocrinus, Cyclolituites, Cypricardia, Cystiphyllum, Dawsonoceras annulatum, Deiphon, Encrinurus, Eriptychius, Gilbertsocrinites, Gyroceras, Harpides, Hemipronites, Hortholus, Illænus, Illænus crassicauda, Liospira, Lituites, Lyellia, Megalaspis, Orthoceras (Dawsonoceras) annulatum, Palæaspis, Petraster, Pleurotomaria, Ptilodictya lanceolata, Pycnosaccus, Rhynchotreta, Rhynchotreta cuneata, Sagenocrinus, Streptorhynchus, Telephus, Trochoceras, Turbo.
amherstburgensis—Schuchertella.
amiana—Isochilina.
amii—Isochilina, Orthograptus, Paterula, Stromatopora, Tetragraptus.
ammonis—Cyathophyllum.
ammonius—Lituites, Trocholites.
amoena (um)—Cyrtoceras, Dalmanella, Orthis, Pianodema.
amphitrite—Euconia, Pleurotomaria.
ampla—Callopora, Cyrtodonta, Drepanella, Hallopora, Holopea, Isochilina, Lophospira, Murchisonia, Opisthoptera.
amplectens—Eurystomites.
amplexicaulis (e)—Diplograptus, Diplograptus (Glyptograptus), Diplograptus foliaceus, Graptolithus.
amplicameratum—Orthoceras.
amplicorne—Cyrtoceras (Phragmoceras).
amplimarginatus—Bathyurus.
amplitubulata—Halysites catenularia.
amplus (um)—Cypricardites, Holocystites, Modiolodon, Œnonites, Piloceras, Strophostylus.
amycus—Orthoceras, Orthoceras (Cycloceras).
amygdalina—Ambonychia, Cleionychia, Cypricardites, Leperditia, Palæarca, Posidonomya.
anadontoides—Lyonsia.
analoga—Metoptoma, Scenella, Strophomena.
anastomotica—Palæodictyota.
anatiformis—Cheirocrinus, Chirocrinus, Cliocerma, Echinoencrinites, Glyptocystites.
anatiniformis—Lyonsia, Pterotheca, Tellinomya.
anceps—Gonioceras, Obolus, Ormoceras, Orthoceras.
anchoralis—Acidaspis, Ceratocephala.
ancilla—Dendrocrinus, Homocrinus.
anderdonense—Cystiphyllum, Trochoceras.
andina—Parabolinella.
andrewsi (i)—Callopora, Hallopora, Heterotrypa, Monticulipora.
anellus—Orthoceras, Spyroceras.
angela—Ctenodonta, Tellinomya.
angelini—Bathyurus, Holometopus.
angularis (e)—Arthroclema, Atactopora, Callopora, Escharopora, Eurymyella, Gaurocrinus, Glyptaster (Eucrinus), Glyptocrinus, Hallopora, Leperditia, Mesotrypa, Moorea, Ophileta, Ophiletina, Ptychocrinus, Stictoporella.
angulatus (a, um)—Acroculia, Camarotœchia semiplicata, Cheirocrinus, Chirocrinus, Cyathocrinus, Dendrocrinus, Kionoceras, Liospira, Octonaria, Orthoceras, Palæocrinus, Petraia, Platyceras, Phylloporina, Pleurotomaria, Raphistoma, Retepora, Scalites, Stephanocrinus, Streptelasma, Strophomena, Subretepora, Uncinulus nucleolatus.
angulifera—Orthonota.
angulosum—Conoceras, Cypricardia.
angustatus (a, um)—Bellerophon, Bucania, Camarotœchia litchfieldensis, Ctenodonta, Dendrocrinus, Homocrinus, Hormotoma gracilis, Liospira, Modiolopsis, Murchisonia, Streptelasma divaricans, Tellinomya, Tremanotus.
angusticameratum—Endoceras.
angusticaudus—Isotelus, Isoteloides.
angusticollis—Illænus.
angustifolius — Diplograptus, Graptolithus, Phyllograpsus, Phyllograptus, Sphenothallus.
angustifrons—Cypricardites, Modiolopsis.
angustus (a, um)—Cypricardites, Escharopora, Fusispira, Gomphoceras, Phragmoceras, Platycrinus, Ptilodictya.
ann dixoni—Platycrinites.
anna—Apiocystites, Crania, Hormotoma, Leperditia, Murchisonia, Phyllograptus, Thamnograptus.
annectans—Graptolithus, Leptograptus, Ptychoparia.
annieana—Orthis, Platystrophia.
annulatus (a, um)—Amplexus, Cannapora, Climacograptus scalaris, Cyclendoceras, Cyrtoceras, Dawsonoceras, Endoceras, Huronia, Maclurea, Maclurites, Orthoceras, Orthoceras (Cycloceras), Pterygometopus, Syringopora.

annulifera—Batostomella, Lioclemella, Trematopora.

anodontoides—Modiolopsis.

anomala—Faberia, Metoptoma.

anomalocrinus—Podolithus.

anstedi—Calathium.

anteceptus—Cyclocystoides.

antennarius—Climacograpsus, Climacograptus, Cryptograptus, Diplograpsus.

antenor—Orthoceras.

antheloidea—Constellaria, Hellipora, Monticulipora, Stellipora.

anthonensis (e)—Scenidium, Skenidium.

anthonii—Asterias.

anticorum—Gorgonia.

anticostiana—Anabaia, Leperditia, Leperditia canadensis, Leperditia fabulites, Protozeuga.

anticostiensis (e)—Actinoceras, Ascoceras, Athyris, Athyris headi, Bairdia, Calapœcia, Catazyga, Catazyga headi, Chasmops, Cyathophyllum, Cypricardites, Cyrtodonta, Dalmanites, Dictyonella, Dinorthis (Plæsiomys) porcata, Eichwaldia, Krausella, Leperditia, Orthis, Orthoceras, Pleurocystis, Pleurocystites, Rhynchonella, Rhynchotrema, Stricklandinia, Stropheodonta (Brachyprion), Strophomena, Triplecia insularis, Zygospira.

antiquatus (a)—Asterias, Bellerophon, Buthotrephis, Cryptophragmus, Eoharpes, Harpes, Harpina, Palæaster, Palasterina, Pleurotomaria, Strophomena.

antiquus (a, um)—Argaster, Asterias, Camarotœchia, Climacograptus, Conocardium, Crinosoma, Cypridina, Holopea, Lingula, Littorina, Mesopalæaster, Pachystroma, Palæaster, Petraster, Pleurorhynchus, Ptilodictya, Stromatopora, Stropheodonta patersoni.

apertus (a, um)—Petraia, Pleurotomaria, Poterioceras, Pycnoceras, Raphistoma, Staurograptus dichotomus, Streptelasma, Tetradium, Tetradium fibratum.

aphæa—Ambonychia, Streptomytilus.

apicalis—Eridonychia, Hemipronites, Orthis, Polytœchia.

aplata—Favosites hisingeri.

apollo—Anacheirurus, Ceraurus (Cyrtometopus), Cheirurus, Eurystomites, Lituites.

apolonista—Symphysurus.

appressa—Dekayia, Holopea, Leperditia.

approximatus (a, um)—Cameroceras, Chætetes, Endoceras, Glossograptus quadrimucronatus, Helopora, Monticulipora, Nemagraptus gracilis, Orthodesma, Palæasterina, Streptorhynchus, Strophomena vetusta, Tetragrapsus.

approximus—Pseudosphærexochus.

apriniformis—Homœospira, Rhynchospira.

aprinis—Atrypa, Rhynchonella, Rhynchospira.

aquila—Zygospira.

aquilonaris—Bronteus, Goldius.

arabella—Pleurotomaria.

arachne—Lophospira, Murchisonia, Pleurotomaria, Stricklandia, Syntrophia.

arachnoidea—Aulopora, Stomatopora.

aranea—Dichograpsus.

aratus (a)—Cypricardina, Leptodomus (Sanguinolites).

arborea—Monticulipora.

arborescens—Cyathophyllum, Dimerocrinus, Thysanocrinus.

arbusculus (a, um)—Calyptograptus, Dictyonema, Homotrypa, Inocaulis.

arca—Plectambonites.

archimedes—Daedalus, Spirophyton, Taonurus.

arcolata—Monticulipora.

arcta—Cytherella rugosa.

arctatum—Bythocypris punctulata, Eunema, Trochonema.

arcticameratum—Cyrtoceras, Mælonoceras.

arcticus (a, um)—Alveolites, Chætetes, Conchidium, Cromus, Dinorthis meedsi, Grammysia, Holopea, Leperditia, Leperditia baltica, Modiolodon, Oncoceras, Orthoceras, Orthis (Dinorthis) meedsi, Primitia, Receptaculites, Rhynchotrema deckerensis, Whitella.

arctipora—Bythopora, Ptilodictya.

arctiventrum—Endoceras.

arctostriata—Atrypa, Atrypa reticularis.

arcturus—Illænus, Thaleops.

arcuaria—Dalmanella, Orthis.

arcuatus (a, um)—Bathyurus, Colpoceras, Cornulites, Cyrtoceras, Didymograpsus, Didymograptus, Drepanodus, Edmondia, Graptolithus, Graptolithus (Monoprion), Illænus, Krausella, Modiolopsis, Olenus, Paradoxides, Pontocypris, Strophomena.

arcuoliratum—Orthoceras.
arcuosus (a)—Clorinda, Pentamerus.
arenaria—Holopea, Murchisonia, Plethospira.
arenatum—Endoceras.
arenicola—Isotelus.
areolata—Aspidopora, Spatiopora.
arethusa—Stricklandinia, Strophomena, Syntrophia.
areyi—Barrandella, Clorinda, Dictyonema, Eotomaria.
argentea—Camarotœchia, Rhynchonella.
argentinus (a) — Arethusina, Illænus, Monticulipora, Thysanopyge.
argenturbica—Rhynchonella, Rhynchotrema.
argo—Bellerophon, Oxydiscus.
argutus (a, um)—Diploclema sparsum, Glyptocrinus, Modiolopsis, Monograptus, Pachydictya, Ptilodictya, Stelidiocrinus.
argylensis—Hormotoma, Murchisonia.
arisaigensis—Murchisonia.
aristides—Cyrtoceras.
arkansanus (a)—Cyphaspis, Dalmanites, Dalmanites (Synphoria), Dicranopeltis, Odontopleura.
arkansasensis—Dicranograptus nicholsoni, Dicranograptus ramosus.
armanda—Orthis, Syntrophia.
armatus (a, um)—Arthroclema, Bathyurus, Bumastus, Helopora, Heterocystites, Illænus, Isochilina, Isochilina pygmæa, Leperditia, Lumbriconereites, Plethopeltis.
armosus—Eucalyptocrinus, Glyptaster, Glyptocrinus, Siphonocrinus.
arnheimensis—Rhynchotreta dentata.
arrectus (a)—Aparchites, Cyrtia exporrecta, Cyrtia trapezoidalis.
artemesia—Hormotoma, Murchisonia.
arthracanthus—Glossograpsus, Glossograptus.
articulatus (um)—Cyathophyllum, Madreporites.
articulosus—Calceocrinus, Castocrinus, Heterocrinus.
arundinaceus—Dicranograptus, Graptolithus, Mastigograptus.
aryballium—Astylomanon cratera.
ascialis—Arabellites.
ashmani—Orthodesma.
asper (a, um)—Acanthoclema, Batostomella, Callopora, Chasmatopora, Cruziana, Dekayia, Eucalyptocrinus, Favosites, Fenestella, Gorgonia, Heterospongia, Holocystites, Leptæna, Lioclema, Lophospira, Monticulipora, Murchisonia, Paleofavosites, Phylloporina, Plectambonites sericeus, Rusophycus, Spatiopora, Subretepora, Terebratulites, Trematopora.
asperatostriata—Chasmatopora, Phylloporina, Subretepora.
asperatus (a)—Archæocrinus, Conularia, Deocrinus, Spirifer, Spirifer (Eospirifer), Rhodocrinus.
asperostriatus—Straparollina, Straparollus.
asperula—Crania, Monticulipora, Monticulipora wetherbyi, Petigopora.
aspinosus—Dalmanites.
astartæformis—Ctenodonta, Tellinomya.
astraformis—Plasmopora, Porites.
astragoletes—Asaphus.
astrodistans—Clathrodictyon vesiculosum.
atava—Eoorthis, Orthis (Plectorthis), Rafinesquina, Strophomena.
atheroidea—Lissatrypa.
atlanticus (a, um)—Beyrichia, Eccyliomphalus, Endoceras, Harpides, Maclurea, Maclurites.
atlas—Cyathophyllum, Homalonotus.
atratus—Girvanella, Strephochetus.
atrypoides—Eoorthis (Orusia) lenticularis, Orthis lenticularis.
attenuatus (a, um)—Acrotreta, Ambonychia, Aphetoceras, Calceola, Cleionychia, Clioderma, Ctenodonta, Cymatonota, Cyrtospira, Lingula, Pterotheca, Rhizophyllum, Rhopalonaria, Tellinomya.
atticus—Orthoceras.
attritus (a)—Chætetes, Dekayia, Monticulipora.
auburnensis—Platystrophia ponderosa.
auconini—Tarphyceras.
augusta—Metoptoma.
augustina — Lophospira, Murchisonia, Murchisonia (Hormotoma).
aulema—Endoceras, Nanno.
auloporoides—Alecto, Proboscina, Stomatopora.

aurantium—Crystallocystis, Echinosphæra, Echinosphærites, Echinus, Sphæronites.
aureatus—Mariacrinus.
auriculatus—Bellerophon.
auriformis (e)—Capulus, Fucoides, Platyostoma, Stomatis.
aurita—Pattersonia, Strobilospongia.
aurora—Lingula, Rafinesquina, Strophomena.
austini—Agelacrinus, Clisophyllum, Homotrypa, Lumbriconereites, Strephodes.
australis (e)—Catazyga uphami, Stromatocerium huronense.
austrina—Anodontopsis.
autolycus—Orthoceras.
avellana—Jaekelocystis.
avellanedæ—Maclurea, Maclurites.
aviculoidea—Megambonia, Prolobella, Pterinea.
aviculoides—Modiolopsis, Pterinea.
aviformis—Avicula.
avus—Nautilus.
axion—Pleurotomaria.
bacca—Coccocrinus.
baccula—Pisocrinus.
backii—Actinoceras, Ormoceras, Orthoceras.
baconi—Hyolithes.
baculus—Holocystites.
baeri—Glyptocrinus, Gyroceras, Lituites, Reteocrinus, Trochoceras, Xenocrinus.
baffinensis—Ctenodonta, Cycloceras olorus, Cyrtoceras, Vanuxemia.
baileyi—Acrotreta.
balanoides—Anomalocystites, Ateleocystites, Enopleura, Placocystis.
balantium—Astylomanon cratera.
balteatum—Orthoceras, Spyroceras.
balt(h)ica—Cythere, Leparditia.
bannisteri—Gyroceras, Trochoceras.
barabuensis (e)—Dicellocephalus, Dikelocephalus, Metoptoma, Platycolpus.
barbatulus—Diplograptus.
barberi—Corynotrypa.
barrandi(i)—Amphion, Asaphus, Barrandella, Basilicus, Calceocrinus, Canadocystis, Clorinda, Cremacrinus, Malocystites, Ogygia, Pentamerus, Pliomerops, Ptychoparia, Rastrites, Reteograptus, Retiograptus, Sigmacystis, Thamnograptus, Virgiana.
barretti—Klœdenia, Stromatopora, Syringostroma.
barriensis—Bumastus, Illænus.
bartonensis (e)—Acanthograptus, Orthoceras, Thamnograpsus.
basalis—Edriospongia, Lumbriconereites, Rhinidictya, Stictopora.
basaltica—Favosites.
basilicus—Diplograptus, Diplograptus vulgatus, Orthograptus.
bassleri—Clisospira, Cryptozoon, Dalmanella, Homotrypa, Meekopora, Sagenocrinus, Scenidium.
bastini—Chonetes.
battis—Hebertella, Orthis.
bayfieldi(i)—Actinoceras, Illænus, Ormoceras, Orthoceras, Vanuxemia.
beachi—Trochonema.
beachleri—Callicrinus.
beani—Ceramopora, Paleschara.
bearsi—Isotelus, Vogdesia.
beatrice—Lophospira, Murchisonia.
beauharnoisensis—Palæophycus.
beaumonti—Actinoceras, Pentamerus.
beauportense—Orthoceras, Spyroceras.
bebryx—Dalmanites.
beckeri—Bumastus, Megalaspis.
becki(i)—Calymene, Dictyolites, Dictyophyton, Lithodictuon, Orthoceras, Paradoxides, Triarthrus.
beecheri—Conocardium, Homeospira, Lyriocrinus, Mariacrinus.
beekmanensis (e)—Cyrtoceras, Euconia, Pleurotomaria.
belemnurus—Megalaspis.
bella—Actinopteria, Beyrichia, Inocaulis, Lingulella, Meristella, Obolus (Lingulella), Ophileta, Palæodictyota.
bellaforma—Rhynchonella.
bellapuncta—Bucania.
bellarugosa—Hebertella (Glyptorthis), Orthis, Orthis (Herbertella).
bellasculptilis—Poleumita.
bellatulum—Kionoceras, Orthoceras.
bellevillensis—Bumastus, Heterocrinus, Ohiocrinus, Stenocrinus.
belli—Anomocarella, Chonophyllum, Dicellocephalus, Dikelocephalus, Glossina, Lingula, Obolus, Palæoglossa, Triarthrus.
bellicincta—Hormotoma, Murchisonia.
bellilineata—Pterinea.
bellistriatus (a)—Ambonychia, Cornulites, Fenestella, Posidonomya.

bellulus (a, um)—Conradella, Cryptolithus, Cyclocystoides, Cyclonema, Dalmanella, Dalmanella (Bathycœlia), Goniophora, Helopora, Mesopalæaster, Orthis, Petraster, Phragmolites, Pianodema, Promopalæaster, Trinucleus, Trochonema.
beloitensis (e)—Actinoceras, Eccyliopterus, Orthoceras, Scenella, Subulites, Trochonema.
belti—Acrotreta, Linnarssonia, Obolella.
beltrami (i)—Lingula, Orthoceras.
benedicti—Allocrinus, Cyathocrinus, Habrocrinus, Holocystites, Orthis, Pisocrinus, Ptychophyllum, Saccocrinus, Subulites.
benjamini—Isotelus, Monotrypa.
bernensis—Camarella.
beta—Asaphus, Isotelus.
beudanti—Actinoceras.
beverlyensis—Palæophycus.
bialveata—Delthyris.
biangulatum—Litoceras, Pleurotomaria, Trochonema.
bicarinatus (a)—Lingula, Straparollus.
bicincta—Lophospira, Murchisonia, Pleurotomaria.
bickmoreanus (um)—Lituites, Lituites (Ophidioceras), Plectoceras.
biclavata—Arthraria.
biconstrictus—Receptaculites.
biconvexa—Atrypa.
bicornis—Amphilichas, Beyrichia, Climacograptus, Climacograptus caudatus, Dalmania, Dalmanites, Dicranella, Diplograpsus, Diplograptus, Fenestella, Graptolithus, Lichas (Hoplolichas), Lichas (Platymetopus).
bicostatus (a)—Cliopteria, Orthis, Reticularia, Spirifer.
bicurvatus (a)—Cyrtospira, Dicellograptus divaricatus.
bidens—Atrypa, Rhynchonella.
bidentatus—Atrypa, Calceocrinus, Rhynchonella, Terebratula.
bidorsatus (a)—Bellerophon, Bucania, Ctenodonta, Tetranota.
bifidus—Didymograptus, Graptolithus, Graptolithus (Monoprion).
biforatus (a)—Orthis, Platystrophia, Terebratulites.
bifurca—Conularia.
bifurcatus (a)—Arthropora, Callicrinus, Cladopora, Eschara, Pachydictya, Sticopora, Syringopora.
bigeneris—Drepanella.
bigsbyi — Actinoceras, Agelacrinites, Cryptolithus, Cyclaster, Edrioaster, Edriocystis, Graptolithus, Graptolithus (Monoprion), Huronia, Maclurea, Maclurites, Orthoceras, Tetragraptus, Zaphrentis.
bilamellatum—Anisophyllum.
bilateralis—Caninia, Drepanella, Goniotrypa, Scofieldia, Zaphrentis.
bilex—Cyclonema, Turbo.
bilineatus (a, um)—Conularia, Bellerophon, Orthoceras, Spyroceras.
bilix—Cyclonema, Pleurotomaria, Turbo.
billingsana — Centronella, Lingulella, Murchisonia, Stricklandinia, Whitfieldella.
billingsi (i)—Agelacrinites, Agelacrinus, Aparchites, Archinacella, Arthroclema, Bumastus, Cleiocrinus, Cyrtoceras, Cyrtodonta, Diphyphyllum, Eurychilina, Glyptocrinus, Hemicystites, Leperditia, Lophospira, Metoptoma, Monticulipora, Nieszkowskia, Nyctopora, Orbignyella, Ottawacrinus, Periglyptocrinus, Primitia, Pseudosphærexochus vulcanus, Salterella, Steliella, Strophomena, Triarthrus, Trimerella, Zitteloceras.
billingsianus—Castocrinus.
biloba—Anomia, Bilobites, Callicrinus, Cryptodiscus, Fucoides, Orthis, Pterygotus, Spirifer.
bilobatus (a, um)—Bellerophon, Cruziana, Cyrtolites, Fucoides, Rusophycus.
biloculare—Conchidium.
bimucronatus—Ceraurus, Diplograptus, Hallograptus, Lasiograptus.
bipartitus (a)—Donacicrinites, Erisocrinus, Leptæna, Stropheodonta, Stropheodonta (Leptostrophia), Strophomena.
bipennis—Boliviana.
biplicata—Centronella.
bipunctatus (a)—Didymograpsus, Eschara, Ptilodictya.
bisecta—Acrotreta, Agnostus.
bisinuatus—Pentamerus, Pentamerus oblongus.
bispinosus (a)—Ceraurus, Ctenobolbina.
bispiralis—Lophospira, Pleurotomaria.

bisulcata—Atrypa, Camarella, Cyclospira, Lingula, Merista, Rhynchonella.
bitruncata—Palæaspis.
bituberculatus—Bathyurus, Lloydia.
bivertex—Leperditia, Ulrichia.
bivia—Leperditia.
bivittata—Cœlocaulus, Murchisonia.
blainvillei—Actinoceras, Columnaria.
blairi—Ptychoparia.
bloomfieldensis—Sphærocystites.
blumenbachii (ia)—Calymene, Conocardium, Euchasma.
bolivianus (a, um)—Agnostus, Lingula, Orthoceras.
boliviensis—Asaphus, Cryptolithus, Megalaspis, Trinucleus.
boltoni—Arctinurus, Lichas (Oncholichas), Paradoxides, Platynotus, Pterolichas.
bondi—Cyrtoceras, Plectoceras.
borealis (e)—Aphetoceras, Ascoceras, Athyris, Athyris headi, Calapœcia, Catazyga headi, Clitambonites, Cryptozoon, Duncanella, Hebertella, Orthis, Psiloconcha sinuata, Streptelasma, Terebratula, Trimerella, Trochoceras.
borkholmiensis—Rhinidictya.
botryoideum—Cœnostoma.
bovinum—Cyrtoceras.
bowdeni—Lophospira, Murchisonia.
boycii—Cyrtoceras, Cyrtactinoceras.
boydi (i)—Loxonema, Murchisonia.
boylei—Eurypterus, Hormotoma, Murchisonia, Turritoma, Tylopterus.
brachiatus—Dimerocrinus, Glyptaster, Myelodactylus, Thysanocrinus.
brachymera—Phycograptus.
brachynota—Delthyris.
brackenbushi—Megalaspis.
bradti—Pterinea.
brainerdi—Cameroceras, Cameroceras (Proterocameroceras), Girvanella, Lingula, Orthoceras, Strephochetus.
brasiliensis—Bollia lata.
brauni—Holocystites.
brazilianus—Clidophorus.
bretonensis—Obolus, Palæobolus.
breva—Eurymyella shaleri.
breviata—Pontocypris mawii.
brevicaudatus—Dalmanites limulurus.
breviceps—Bathyurus, Chasmops, Dalmania, Dalmanites, Dolichopterus, Leiostegium, Lichas, Metopolichas.
brevicorne—Cyclostomiceras, Cyrtoceras.
brevicula—Dalmanella, Dalmanella emacerata.
brevicurvatum—Oncoceras.
brevimarginatus—Cyphaspis, Haploconus, Proetus.
brevior—Cuneamya scapha.
breviplicata—Camarella.
brevirostris—Anastrophia, Atrypa, Pentamerus, Rhynchonella, Terebratula.
brevis (e)—Matheria, Schmidtella, Streptelasma, Stricklandia, Stricklandinia, Subulites, Subulites (Polyphemopsis).
brevispinosa—Acidaspis.
brevispinus—Bathyurellus.
brevispira—Gyronema.
breviuscula—Cypricardites, Cyrtodonta.
briareus (a)—Chætetes, Eridotrypa, Echaropora, Monotrypella, Monticulipora, Monticulipora (Monotrypa), Ptilodictya.
bridgportensis—Myelodactylus.
brisa—Pterinea.
briseis—Lingula.
bristolense—Endoceras.
brittsi—Cyathocrinus.
brocki—Helicotoma.
brongniartia (i)—Conotubularia, Fucoides, Ormoceras, Orthoceras.
brontes—Orthoceras.
brownii—Arca.
brownsportensis—Diaphorostoma, Platyceras, Strophonella semifasciata.
bryonoides—Graptolites (Didymograptus), Graptolithus, Tetragrapsus, Tetragraptus.
buchiana—Beyrichia.
buchii—Cupellæcrinites.
bucklandi (i)—Calymene, Ceraurus, Orthoceras.
buelli (i)—Bucania, Bucania (Tremanotus), Salpingostoma.
buffaloensis—Pterygotus.
bulbosus (a)—Cyphotrypa, Rhizograpsus, Rhizograptus, Stenopora.
bulbulus—Caryocrinites, Caryocrinus.
bullifera—Astylomanon verrucosum, Eurychilina, Palæomanon verrucosum
bullulatum—Cyathophyllum.
burginensis—Bellerophon troosti, Lophospira medialis.
bursa—Astylospongia, Palæomanon.
byrnesanus—Corydocephalus, Lichas.

—Æchmina, Byssonychia, Dicra-
, Leperditia, Orthoceras, Ortho-
a, Rhytimya.
isis—Phragmoceras.
ormis (e)—Hexameroceras, Hexa-
ras.
—Orthoceras.
us—Dendrocrinus, Didymograp-
idymograptus, Graptolites, Grap-
us, Poteriocrinus (Dendrocrinus),
graptus.
Leperditia.
a—Leperditia.
—Climacograptus, Eucalyptocri-
Hypanthocrinites.
sa (um)—Blothrophyllum, Butho-
is, Cladopora, Diplophyllum.
us—Diplograptus foliaceus.
s (a)—Glycerites, Leptotrypa,
iculipora, Monticulipora (Mono-
).
—Bellerophon.
iforme—Pycnoceras.
ous—Conocephalites.
us (a)—Camarella, Eccyliompha-
uomphalus, Fusispira, Lonchoce-
s, Lophospira, Murchisonia, Nau-
Pleurotomaria, Ptychoparia,
ptaculites, Ribeiria, Syntrophia,
lites, Tarphyceras, Triplecia,
esia.
me—Pycnoceras.
ensis—Eurydictya.
—Columnaria, Favistella.
ris (e)—Corynoides, Cyathophyl-

ides—Helenterophyllum.
s (um)—Cyathophyllum, Entero-
, Lecanocrinus, Petraia, Strepte-

—Orthis.
halus (a)—Calymene, Calym-
, Dalmania, Dalmanites, Phacops,
gometopus.
mma—Orthis, Orthis (Dinorthis).
oides—Trematopora.
(um)—Homotrypa, Pycnopegma.
nia—Pleurotomaria.
—Atrypa, Ctenodonta, Tellinomya.
s (a)—Aspidopora, Chætetes, Le-
rinus, Monticulipora, Monticuli-
(Diplotrypa), Prasopora, Pycno-
.

calyx—Pleurotomaria.

camdenensis—Pasceolus.

cameolare—Orthoceras.

camerata—Calymene, Strophomena.

campana—Pisocrinus.

campanulatus (a, um)—Dawsonia, Diaphorostoma, Dimerocrinus, Platyceras, Thysanocrinus.

campbelli—Syntrophia.

campestris—Tolmaia.

camura (um)—Atrypa, Cyrtoceras, Rhynchonella, Trematospira.

canadensis (e)—Actinoceras, Actinodictyon, Agnostus, Amphion, Amplexopora, Apiocystites, Archinacella, Aristozoe, Asaphus, Ascoceras, Basilicus, Batostoma, Bellerophon, Billingsites, Calapœcia, Calathium, Calaurops, Callocystites, Capulus, Ceratopyge, Chiton, Chonophyllum, Corynotrypa, Cypricardinia, Cypricardites, Cyrtodonta, Dictyonema, Dinobolus, Discoceras, Drepanella richardsoni, Ecculiomphalus, Eccyliomphalus, Ectenocrinus, Goniatites, Hercynella, Heterocrinus, Hormotoma salteri, Ilionia, Inocaulis, Ischadites, Labechia, Leperditia, Lichas, Lingula, Megalomus, Metoptoma, Obolellina, Obolus, Ogygites, Orthoceras, Panenka, Paractinoceras, Petraia, Phænopora fimbriata, Phragmoceras nestor, Piloceras, Pleurotomaria, Pliomera, Pliomerops, Priscochiton, Pseudosphærexochus, Pterygotus, Ptilodictya, Ptychophyllum, Receptaculites, Remipleurides, Rhinidictya neglecta, Sactoceras, Salpingostoma, Schizambon, Schizambon fissus, Siphonotreta scotica, Sphærexochus, Sphærophthalmus, Steganoblastus, Stomatopora, Stricklandia, Stricklandinia, Stromatocerium, Strophostylus, Subulites, Tentaculites, Triarthrus, Trocholites, Trochonema umbilicatum, Tryblidium, Turrilepas, Whitella, Zaphrentis.

canaliculatus (a, um)—Barrandeocrinus, Clioderma, Cylicocrinus, Dermatostroma, Dimerocrinus, Orthodesma, Pterotheca, Rhodocrinus (Thysanocrinus).

canalifera—Eotomaria, Pleurotomaria.

canalis—Asaphus, Isotelus, Leperditella, Leperditia, Orthis.

cancellatus (a)—Acrotreta, Actinomya, Bellerophon, Cyclonema, Cyrtoceras, Desmograptus, Dictyograptus, Dictyonema, Kionoceras, Littorina, Lituites, Megambonia, Melia, Modiolopsis, Nautilus, Orthoceras, Protowarthia, Sinuites, Strophostylus, Technophorus, Whiteavesia.
candens—Ctenodonta, Tellinomya.
canneus—Holocystites.
cannonensis (e)—Lyrodesma, Monticulipora.
cantharium—Astylomanon cratera.
capax—Atrypa, Bathyurus, Bellerophon, Chonophyllum, Favosites, Leperditia, Lituites, Modiolopsis, Nautilus, Platycolpus, Rhynchonella, Rhynchotrema.
capillaceus—Monograptus.
capillaris—Nemagrapsus, Nemagraptus, Thamnograptus.
capitolinum—Actinoceras, Jovellania, Orthoceras.
caponiformis—Anomalocrinus, Ataxiacrinus.
capricornulus—Conilites, Cyrtoceras.
caractaci—Trinucleus.
carausii—Orthis.
carchari(æ)dens—Blastoidocrinus.
carcinodea—Brongniartia.
cardinalis (e)—Streptorhynchus, Strophomena.
cardinata—Vanuxemia.
caribouensis—Asaphus.
carinatus (a, um)—Ambonychia, Avicula, Byssonychia, Carinaropsis, Ctenodonta, Cypricardites, Cyrtolites, Dolabra, Goniophora, Glyptocrinus inseparatus, Heliophrentis, Maclurea, Maclurites, Modiolopsis, Murchisonia, Nuculites (Orthonota), Œnonites, Pleurotomaria, Pterinea, Streptotrochus, Tellinomya, Whitella.
carinifera—Bucanopsis, Murchisonia.
carleyi—Cruziana, Dalmanites, Dinorthis, Glyptocrinus, Mariacrinus, Orthis, Orthoceras, Pterygometopus, Rusophycus.
carltonense—Orthoceras.
carnensis—Hemicystites.
carpenteri—Ctenodonta.
carrollensis (e)—Cyrtoceras, Lituites (Ophidioceras) hercules, Modiolopsis, Protophragmoceras.
carterensis—Columnaria.
carteri—Stromatopora.

carveri—Onc
casei—Ambo
drocrinus,
caseyi—Poter
casii—Pleuro
cassandra—M
cassina—Eot
ma, Lopho
spira.
cassinensis (
miceras, Ec
pes, Lituite
warthia, Sc
nuites.
castellana—St
caswelli—Cu
Grammysia.
cataline—Ort
cataractensis-
catenularia—I
catenulatus (
fieldeni, Sti
catharina—M
catilloides—B
discus.
cato—Orthoce
catulus—Orth
caudatus (a)–
macograptu
cavernosa (u
troma.
cayleyi—Amp
celata—Primit
celator—Cyat
cellulata—Cal
cellulosus (a,
Cyrtolites d
Phytopsis, T
celsus—Dend
centralis—Lop
mitia.
centricarinatu
centricornis—
centrilineata—
centrosa—Orth
centrota (um)
troma.
ceralepta—Aci
ceres—Stroph
cerithioides—
cervicornis—A
dopora, Inoc
cestrotus—Eur
nopterus).

chadwicki—Eurypterus.

chætophorus—Acanthograptus.

chamberlini—Lophospira, Murchisonia.

chambersi—Beyrichia, Ceratopsis, Tetradella.

chambliensis (e)—Pholadomorpha, Proetus, Whiteavesia.

champlainensis (e)—Bucania, Cyrtactinoceras, Endoceras, Eurystomites, Lichas, Nautilus, Rafinesquina, Tarphyceras.

channahonensis—Proetus.

chapmanensis—Monograptus priodon.

chapmani—Palæocrinus, Palæocystites, Stricklandinia.

charaxata—Zaphrentis.

charletona—Hyattidina.

charlottæ—Leptæna.

charlotte—Orthis.

charon—Bellerophon.

chatfieldensis—Aparchites, Modiolopsis.

chazianum—Stromatocerium lamottense.

chaziense—Gonioceras.

chazyensis—Pseudosphærexochus.

chemungensis—Atrypa.

chicagoensis—Arctinurus, Bucania, Bumastus, Cleidophorus, Corymbocrinus, Cyphocrinus, Eucalyptocrinus, Holopea, Illænus, Marsupiocrinus, Pentamerus, Periechocrinus, Tremanotus, Trematonotus.

chidlensis—Labyrinthites.

chiromorphus—Eunicites.

christiana—Astylospongia.

christyi—Actinocrinus, Calymene, Cyphaspis, Megistocrinus, Periechocrinus, Saccocrinus, Synhomalonotus.

chrysalis — Calceocrinus, Cheirocrinus, Cremacrinus, Crinocystis, Crinocystites, Eucheirocrinus, Proclivocrinus, Tetracystis.

cicelia—Lophospira, Murchisonia.

cicerops—Eurypterus, Eusarcus.

ciliatus (a) — Beyrichia, Ctenobolbina, Diplograpsus, Diplograptus, Glossograptus.

cincinnatiæ—Melia.

cincinnatiensis (e)—Acidaspis, Actinomya, Agelacrinites, Agelacrinus, Ambonychia, Arthropora, Bellerophon, Beyrichia, Ceratocephala, Chætetes, Cyclocystoides, Cythere, Cytheropsis, Dendrocrinus, Elpe, Gomphoceras, Homotrypa, Lepidodiscus, Lingula, Lingulella, Lingulella (Dignomia), Lyrodesma, Modiolopsis, Monticulipora, Monticulipora (Peronopora), Orthis, Orthoceras, Pholidops, Poteriocrinites, Pterinea, Ptilodictya, Spirorbis, Technophorus, Trachomatichnus, Zygospira, Zygospira modesta.

cinctosa (um)—Blothrophyllum, Enallopora, Mitoclema, Zaphrentis.

cinctutus (um)—Amplexus, Cyrtoceras.

cingulatus (a, um)—Amplexopora, Amplexus, Archinacella, Cornulites, Ctenodonta, Cypricardites, Cyrtodonta, Grammysia, Tellinomya, Triblidium.

circe—Chilotrypa, Discina, Helopora, Lophospira, Pleurotomaria, Straparollina, Straparollus.

circinalis—Mastigograptus.

circinatus—Ecculiomphalus, Euomphalus.

circinctum—Lioclema.

circularis—Calloporella, Ischadites, Lituites, Monticulipora, Monticulipora (Heterotrypa), Orthis, Orthis (Dalmanella) subæquata, Pentamerus, Pianodema subæquata, Receptaculites, Trocholites.

circulus—Atrypa, Camarella, Orthis, Rhipidomella.

circumcarinatus—Glyptocrinus.

circumliratus—Euomphalus.

cirrifer—Gnorimocrinus.

clara—Discina.

clarkanus—Palæaster.

clarkei—Beyrichia, Bollia, Colpoceras, Ctenodonta, Endoceras, Klœdenella, Palæaster, Stromatopora, Tarphyceras, Tetragraptus.

clarki (i)—Colpoceras, Cyathophyllum, Pseudocrinites, Sagenocrinus.

clarksvillensis—Platystrophia, Plectambonites rugosa.

clathrata (um)—Beyrichia, Chasmatopora, Limaria, Lingula, Orthoceras, Phylloporina, Subretepora.

clathratulus (a)—Chætetes, Stictopora.

claudei—Cyclocrinus, Pasceolus.

clausus (a)—Bellerophon, Callopora, Hallopora.

clavacoideus (a)—Chætetes, Leptotrypa, Monticulipora, Monticulipora (Monotrypa).

clavatus (um)—Orthoceras, Orthoceras (Actinoceras), Rusophycus.

clavelloides—Buthotrephis, Bythotrephis.

claviformis—Leptotrypa, Stigmatella.

clavifracta—Beyrichia clavigera, Isochilina clavigera.

clavifrons—Illænus, Thaleops.

clavigera—Beyrichia, Isochilina.

clavis—Leptotrypa, Stigmatella.

clavus—Gomphocystites.

claypolei—Leperditia, Primitiella, Pseudocrinites.

claytonensis—Straparollus.

cleavelandi—Ptilodictya.

clelandi—Proetus.

clermontensis—Amphilichas.

clevelandi—Arthropora, Echinognathus, Eurypterus, Monticulipora, Monticulipora (Heterotrypa).

cliffordi—Trianisites.

cliftonensis—Camarotœchia (Stegerhynchus) neglecta, Cyrtia, Diaphorostoma, Hyolithes, Leptobolus lepis, Rhynchonella (Stegerhynchus) neglecta.

clintonensis (e)—Acervularia, Brockocystis, Clathropora, Clathropora frondosa, Coleolus, Craniella, Ctenodonta, Cyphaspis, Cyrtoceras, Diaphorostoma niagarense, Eunicites, Graptolithus, Ichthyocrinus, Lagenograptus, Lepadocystis, Lichas breviceps, Lingulops, Metapolichas breviceps, Monograptus, Monticulipora, Monticulipora (Heterotrypa), Palæodictyota, Petrocrania, Platyceras niagarense, Ptilodictya, Rusichnites (Psammichnites), Rhysophycus, Scolithus, Tellinomya (Nucula).

clintoni (i)—Atrypina, Calymene, Ceraurus (Pseudosphærexochus), Cornulites, Cornulites serpularis, Cyphaspis, Hemicrypturus, Lingula, Onchus, Orthoceras, Pseudosphærexochus, Retepora, Strophomena, Spyroceras.

clipeiformis—Pleurotomaria.

clitus—Cyrtoceras.

clivosa—Pleurotomaria, Trochonema (Eunema).

clochensis—Archinacella, Lingula, Cyrtodonta.

clouei—Actinoceras, Orthoceras.

clytie—Heterorthis, Orthis.

coalescens—Camarotœchia, Ceratocephala, Chilotrypa, Trematopora.

cobbi—Pterygotus.

cobourgensis—Lingula.

cobscooki—Chonetes, Palæopecten.

cochabambina—Tunaria.

cœlatus—Eucalyptocrinus.

coeymanensis—Gypidula (Sieberella).

cognatus—Gaurocrinus, Glyptocrinus Reteocrinus.

colbiensis—Platystrophia.

colletti—Conchidium, Holocystites, Pentamerus, Rhynchonella.

colliculus—Chonetes.

collieana—Asaphus, Hemigyraspis.

colon—Orthoceras, Orthoceras (Camer ceras).

coloradoensis—Billingsella, Orthis.

columba—Lingula.

columbiana—Amplexopora, Illænum Platyceras, Raphistoma.

columellata—Cyathaxonia, Lindstromi

columnaris (e)—Chætetes, Kionocera Orthoceras, Tetradium.

cometa—Pontobdellopsis.

comma—Corynoides curtus.

commodus—Holocystites.

communis (e)—Acervularia, Actinopteri Agnostus, Avicula, Callopora oneal Cœloclema, Cyclonema, Diamesopo Eccyliomphalus, Hallopora oneal Homotrypa, Monograptus, Monograpt convolutus, Monticulipora, Montica pora (Heterotrypa) o'nealii, Orthostom

compactus (a, um)—Callograptus, De drograptus, Fusispira, Halysite Halysites agglomeratus, Heterocrin constrictus, Ohiocrinus, Ohiocrin constrictus, Ophileta, Platyceras, Sol nopora, Stromatopora, Subulite Syringopora.

complanatus (a, um)—Aphetoceras, Cl dopora, Dicellograptus, Lituites, Op leta, Pentamerus, Schizostoma, Strap rollus, Whitella.

compressus (a, um)—Aulopora preci Chætetes, Conchopeltis, Conradel Ctenodonta, Cyrtolites, Ecculiomph lus, Eccyliomphalus, Endodesm Eschara, Heliophrentis alternatu Megalomus, Monticulipora, Pentam rella, Pentamerus oblongus, Peron pora, Phragmoceras hoyi, Phragmolit Raphistoma, Rhytimya, Ribeiri Scenella, Sedgwickia, Strictopor Tellinomya, Whitella.

comptus—Lampterocrinus.

Ielopora, Modiolopsis.
ts (a, um)—Ceramopora, Cli-
, Cœloclema, Harpides, Liche-
odiolopsis, Nucleospira, Nut-
romatopora, Trinucleus, Whi-
gospira.
a—Pentamerus.
—Pachydictya, Trigonodictya.
—Holopea, Leperditia, Lo-

(a)—Anodontopsis, Aparchi-
marotœchia, Cytheropsis,
lla, Dictyonella, Eichwaldia,
, Eugasterella, Lingulella,
sis, Obolus, Orthis, Primitia,
thia, Sinuites.
is — Discina, Opisthoptera,
iena.
num—Cyrtoceras.
(a, um)—Dictyonema flabel-
Fenestella, Nematopora,
, Schuchertella, Teratichnus,
adiciformis.
Eunicites.
-Ceramopora, Ceraurinus, Es-
a, Homotrypa, Monotrypella.
(a)—Alecto, Halichondrites,
ma, Murchisonia, Proboscina,
pora.
—Bathyurus, Holasaphus.
Atrypa, Camerella, Hyattella,
na, Triplesia.
s—Cyathocrinites.
s (a)—Anoplotheca, Cœlospira,
, Omphyma, Wingia.
—Camarotœchia.
, um)—Bathyurus, Clathro-
ccocrinus, Cornulites, Cupella-
Cyathophyllum, Cyclonema
Cyrtoceras, Eucalyptocrinites,
tocrinus, Hybocrinus, Hystri-
rbiculoidea, Orthoceras, Orto-
ocrinus, Prasopora, Ptychopa-
nella, Schizotreta, Tryblid-

-Illænus.
—Cupulocrinus, Dendrocrinus.
—Arthrostylus.
-Cyrtoceras.
(a, um)—Discosorus, Holopea,
rinus, Lophospira, Murchiso-
ioceras, Prasopora.
—Lophospira.

conradi—Calymene, Cyrtolites, Dinobolus, Lophospira, Lyrodesma, Illænus, Murchisonia, Obolus, Orthis, Orthis (Dalmanella) subæquata, Pianodema subæquata, Platystrophia cypha, Strophomena, Subulites, Trianisites, Trimerella.

consimilaris—Hipparionyx.

consimilis—Aulopora, Bellerophon, Berenicea, Chætetes, Diastopora, Diastoporella, Goniophora, Illænus, Modiolopsis, Monticulipora, Monticulipora lævis, Monotrypella.

consobrinus—Illænus.

constellariformis—Homotrypa.

constellatus (a, um)—Ceriopora, Chætetes, Cœnostoma, Constellaria, Constellaria plana, Phænopora, Stromatopora.

constrictostriatum—Cyrtoceras.

constrictus (a, um)—Astrocerium, Colpomya, Cymatonota, Cyrtoceras, Didymograptus, Eucalyptocrinus, Favosites, Graptolithus, Heterocrinus, Homocrinus, Murchisonia, Ohiocrinus, Oncoceras, Phacelopora, Phragmoceras, Poterioceras, Primitia, Primitiella, Turritoma.

consuetus (a, um)—Clidophorus, Endoceras, Eoharpes, Harpes, Nematopora.

contexta (um)—Heteronema, Homotrypella, Monticulipora.

contiguus (a)—Conocephalites, Eccyliomphalus, Modiolopsis, Prasopora.

contortus (a)—Dicranograptus, Eunicites, Stromatopora.

contractus (a, um)—Calceocrinus, Cornulites, Ctenodonta, Deltacrinus, Leperditia balthica, Orthodesma, Orthonota, Tellinomya.

conulus—Streptelasma, Zaphrentis.

convexorus—Uncinulus.

convexus (a, um)—Acrotreta, Amphion, Asaphus, Camarotœchia acinus, Clathrospira, Didymograpsus, Dolichometopus, Eurymyella, Fusispira, Illænurus, Liospira, Pliomerops, Rhynchonella acinus, Rhytimya, Schuchertella, Strophomena, Streptorhynchus, Symphysurus.

convolutus (um)—Bellerophon, Graptolithus, Lomatoceras, Monograptus, Myelodactylus, Prionotus.

convolvans—Barrandeoceras, Lituites.

cookana—Walcottia.
cooperi—Syringopora.
coppingeri—Gypidula, Lomatoceras convolutum, Monograptus convolutus, Pentamerus.
cora—Crotalocrinus, Cyathocrinus.
corallifera (um)—Atrypa, Dictyonella, Diphyphyllum, Eichwaldia, Orthoceras, Stromatopora.
corallinensis—Spirifer (Delthyris), Spirifer modestus.
corax—Apatokephalus, Dikelocephalus.
corbis—Ichthyocrinus.
cordai—Bathyurus, Hystricurus.
cordatum—Cyrtoceras.
cordieri—Actinoceras, Asaphus.
cordiformis—Cypricardites, Cyrtodonta, Palæocardia, Plethocardia.
coriformis—Cuneamya.
corinna—Orthis.
corintheum—Cyathophyllum.
corinthia—Rhynchonella.
cornetti—Stephanocrinus.
cornicula (um)—Calceola, Cyrtoceras, Petraia, Piloceras, Streptelasma, Streptoplasma, Zaphrentis.
cornigerus—Illænus.
cornucopiæ—Bollia.
cornulum—Cyrtoceras.
cornuoryx—Orthoceras, Orygoceras.
cornutaforme—Metoptoma, Triblidium.
cornutus (a, um)—Anomalocystis, Anomalocystites, Arabellites, Arthroclema, Callicrinus, Chonetes, Conolichas, Ctenobolbina ciliata, Eucalyptocrinus, Glossograptus, Lichas, Platyceras (Diaphorostoma), Strophomena.
cornuum—Orthoceras.
coronatus (a)—Diagoniella, Eunicites, Protospongia.
corporiculus—Platycrinus.
corpulenta—Dalmanella, Orthis.
corrallinensis—Spirifer crispus.
corriganensis—Gypidula (Sieberella) coeymanensis.
corroboratus—Merocrinus.
corrugatus (a, um)—Avicula, Bellerophon bilobatus, Callicrinus, Conchicolites, Cornulites, Crania, Creseis, Cryptodiscus, Cupellacrinites, Cupellacrinus, Cyphotrypa, Cyrtotheca, Dermatostroma, Favosites, Labechia, Leptæna, Marsipocrinus, Modiolopsis, Monotrypa, Nuculites, Orbicula, Pentamerus oblongus, Proetus, Pterinea, Sinuites cancellata, Stropheodonta, Strophomena, Styliola.

corrugatus—continued.

cortex—Leptotrypa.
corticans—Chætetes, Spatiopora.
corticosa—Chasmatopora, Phylloporina, Phyllopora, Subretepora.
corticula—Pachydictya fenestelliformis
corycœus—Asaphus, Proetus.
corydon—Cyrtoceras.
coryphæus—Asaphus.
costalis—Kokenia, Kokenospira, Orthis.
costatus (a, um)—Ambonychia, Amphicœlia (Leptodomus), Anomalodonta, Bucania, Camarella, Crania, Cyrtolites, Dyeria, Orthis, Platystrophia, Sarcinula, Strophonella, Sphyradoceras, Trochoceras.
costulata (um) — Ascoceras, Ascoceras (Billingsites), Ilionia.
covingtonensis—Cylindrocœlia, Isotelus, Lingula, Protoscolex.
coxii—Calceola.
crassibasalis (e)—Dictyonema, Pachyocrinus.
crassicauda—Illænus.
crassicaulis—Nemagraptus gracilis, Stephanograptus.
crassicosta—Pentamerus nysius.
crassimarginatus (a)—Calymene, Proetus, Schmidtella.
crassimuralis—Monotrypella, Monticulipora, Rhombotrypa.
crassinoda—Drepanella.
crassiplica—Conchidium.
crassiplicata—Cyclocœlia, Encuclodema, Plectorthis.
crassipuncta—Trematis.
crassiradiatum—Conchidium.
crassiramus—Inocaulis diffusus.
crassirostra—Atrypa.
crassisiphonatum—Endoceras, Narthecoceras.
crassitestus—Diplograptus.
crassolaris (e)—Bucania, Tremanotus.
crassoradius—Conchidium, Pentamerus.
crassus (a, um)—Atactoporella, Bucania, Buthotrephis gracilis, Cactograptus, Cladopora, Cœnites, Ctenobolbina, Eucalyptocrinus, Glossina, Goniophora, Heterocrinus, Homotrypella hospitalis, Iocrinus, Jonesella, Limaria, Lingula, Maclurea, Maclurites, Nematophycus, Nematophyton, Orthis, Pachydictya,

-continued.
glossa, Platystrophia, Platystro-
iforata, Porocrinus, Ptilodictya,
la, Stictopora, Streptelasma,
oplasma, Vanuxemia.
Astylomanon, Palæomanon.
mis—Lichenocrinus.
—Orthoceras (Kionoceras).
ns—Glyptaster occidentalis, Or-
is, Protokionoceras.
mis—Trematopora (Chætetes).
a—Trematopora.
tum—Actinoceras, Ormoceras,
eras.
atum—Orthoceras.
(a)—Eridonychia, Eucalypto-
s.
is (a)—Arabellites, Callopora,
orina, Cytherina, Cytheropsis,
orina, Maclurea, Maclurites, Po-
a, Polytropis, Stigmatella, Stra-
is.
rmis—Jonesella, Leperditia.
-Pleurotomaria.
nis—Calapœcia, Columnopora.
—Fenestella, Stictoporella.
(a)—Dalmanella, Hebertella
orthis), Orthis, Spirifer (Delthy-

(a)—Delthyris, Spirifer, Spirifer
ularia), Terebratula.
(a)—Arabellites, Conokephalina,
ites, Dicellocephalus, Dikeloce-
, Encrinurus, Eunicites, Favosi-
chilina, Oxydiscus, Primitia.
—Zaphrentis.
Cycloceras, Orthoceras.
—Acidaspis, Ceratocephala, Ce-
Odontopleura.
ns—Bathyurus, Hystricurus.
—Tetragrapsus.
—Graptolithus, Graptolithus (Mo-
n), Tetragrapsus.
is—Ptilodictya.
—Enoploura, Placocystis.
—Fistulipora.
us (a)—Chætetes, Monticulipora.
-Pleurotomaria.
—Asaphus.
—Amphilichas, Lichas, Lichas
metopus).
—Cruziana.
-Byssonychia.
ndensis—Crania granulosa.

cumberlandiæ—Tentaculites niagarensis.
cumberlandica—Fenestella, Primitia.
cummingsi—Pterygotus.
cumulata—Fistuliporella, Monotrypa (Chætetes), Monticulipora, Nicholsonella.
cuneatus (a, um)—Angellum, Atrypa, Chondrites (Bythotrephis), Clidophorus, Cyrtoceras, Cyrtodonta, Endodesma, Lingula, Lingulella, Lingulobolus affinis, Maclurea, Maclurina, Œnonites, Plethomytilus, Pyrenomœus, Rhynchonella, Rhynchotreta, Tellinomya, Tellinomya (Palæoneilo).
cuneiformis (e)—Clathrograptus, Ctenodonta, Modiolopsis, Orthodesma, Sphenolium, Tellinomya.
cuniculus—Bumastus, Illænus.
cunulæ—Carinaropsis, Phragmostoma.
cupressinus—Chondrites, Chondrites(Trichochondrites).
curdsvillensis—Plectambonites.
curiosus (a)—Asaphus, Clisospira, Pterinea.
curtus (a, um)—Arthronema, Arthrostylus, Bythocypris, Corynoides, Corynotrypa, Ctenobolbina, Ctenobolbina ciliata, Ctenodonta, Cuneamya, Cypricardites, Dendrocrinus, Ischyrodonta, Lingula, Lyonsia, Merocrinus, Modiolopsis, Octonaria, Orthodesma, Orthonota, Pteronitella, Tellinomya.
curvatus (a, um)—Acrotreta, Ambonychia, Cameroceras, Encrinus, Homotrypa, Monticulipora, Orthodesma, Rhinopora.
curvicameratum—Cyrtor(h)izoceras.
curvicostata—Lasiothrix.
curvidens—Œnonites.
curvilatus—Caryocaris.
curvilineatus—Caryocaris.
curvistriata—Schuchertella.
cuspidatus (a)—Arabellites, Atrypa, Didymograptus, Triplecia, Triplesia.
cuvieri (i)—Actinoceras, Conotubularia, Orthoceras.
cyane—Glossina, Lingula, Palæoglossa.
cyathiformis—Ischadites, Palæochonia, Palæospongia, Protospongia, Protospongia (Diagoniella), Trachyum.
cybele—Bathyurus, Petigurus.
cyclonemoides—Pleurotomaria.
cyclops—Isotelus.

cyclopyge—Agnostus, Lejopyge.

cyclostomus (a)—Bucania, Pleurotomaria, Strophostylus.

cyclus—Orthis.

cylindracea—Amplexopora.

cylindricus (a, um)—Actinostroma tenuifilatum, Agraulos, Arionellus, Athyris, Atrypa, Beatricea undulata, Bythocypris, Bythocypris (Cytherellina), Caryocystites, Clathrodictyon cystosum, Cymatonota, Cytherina, Dendrocrinus, Holocystis, Holocystites, Homocrinus, Homotrypa, Isochilina, Lapworthura, Leperditia, Merista, Meristella (Meristina), Orthodesma, Palæocoma, Pentamerus oblongus, Ptychaspis, Tæniaster, Tæniura, Thalamocrinus, Whitfieldella.

cylix—Astylomanon cratera.

cymbula — Carinaropsis, Orthodesma, Phragmostoma.

cypha—Orthis, Platystrophia, Platystrophia lynx.

cyrtodontoidea—Pterinea.

cystata—Dekayella, Dekayia frondosa.

cystosa (um)—Clathrodictyon, Stromatopora.

dactioloides—Lunulites.

dactylioloides—Lunulites

dactylodus—Lumbriconereites.

dactyl(i)oides—Cerionites, Cyclocrinus, Cyrtoceras, Pasceolus

dactylus—Lyriocrinus, Melocrinus, Marsupiocrinites, Rhodocrinus (Lyriocrinus).

dalei (ii)—Callopora, Chætetes, Hallopora, Monticulipora, Monticulipora ramosa.

dalli—Trimerella.

dalmani (i)—Syringopora.

danaanum—Clisiophyllum.

danæ—Dalmania, Dalmanites.

danai—Acidaspis.

danbyi—Avicula, Palæopecten.

danielsi—Illænus.

danvillensis—Saccospongia.

daphne—Fusispira, Lingula, Straparollina, Straparollus, Subulites.

dardanus (um)—Cyrtoceras, Cyrtor(h)izoceras.

darwini (i)—Bathyurus, Cyclocrinus, Kionoceras, Orthoceras, Pasceolus.

davidsoni—Orthis, Orthis calligramma, Rhinobolus, Stricklandinia.

davisi—Lingula, Lingulella.

dawsoni—Dendrograptus, Homalonotus, Homotrypa, Monticulipora, Monticulipora (Heterotrypa), Palæocystites, Palæosaccus, Phylloporina, Subretepora.

daytonensis (e)—Actinoceras, Cyathophyllum celator, Hebertella, Illænus, Orthis, Orthoceras, Strophonella, Zaphrentis celator.

debilis—Glossograptus ciliatus, Syringopora, Trematopora.

decadactylus—Glyptocrinus, Heterocrinus.

decemplicatus (a)—Delthyris, Spirifer, Spirifera, Rhynchonella.

decipiens—Batostoma, Chætetes, Dicra peltis, Ischyrodonta, Leptæna, Leptella Lichas, Liospira, Lyellia, Œnonite Peronopora, Pyrenomœus, Raphistom Vanuxemia.

deckerensis—Edmondia, Klœdenia mar liensis, Orthothetes, Rhynchonell Schuchertella, Stenochisma.

declinata—Favosites.

declivis — Agnostus acadicus, Bellero phon, Helicotoma, Modiolodon, Raf nesquina, Strophomena.

decorus (a, um)—Beyrichia, Cyclonema, Emmelezoe, Eucalyptocrinus, Hypanthocrinites, Hypanthocrinus.

decrescens—Orthoceras.

decursa—Lophospira.

decurta—Murchisonia.

decussatus (um)—Conchidium, Dimophograptus, Pentamerus.

deflecta (um)—Atrypa, Dinorthis (Plesiomys), Glossina, Leptæna, Lingula, Orthis, Palæoglossa, Plæsiomys, Streptorhynchus, Strophomena, Zygospira.

deformata—Archinacella, Crania, Orbicula.

deformis—Discina, Metoptoma, Orthis Orthothetes, Schuchertella, Stephanocrinus, Stricklandinia.

defrancii—Conotubularia, Orthoceras, O thoceratites.

deiopeia—Clathrospira, Pleurotomaria.

dekayi—Eurypterus.

delafieldi—Amphidesma.

delatatus—Bellerophon.

deleta—Archinacella, Carinopsis.

delicatulus (a, um)—Archæocrinus, B thopora, Callithamnopsis, Chætete Corynotrypa, Dictyonema, Hippotho

delicatulus—continued. Labechia, Monograptus, Monticulipora, Nematopora, Orthis, Protospongia, Rafinesquina, Scolithus, Stomatopora, Zaphrentis.
delphicolum—Hexameroceras, Hexamoceras.
delphiensis—Orthoceras (Kionoceras).
delphinocephalus—Trimerus.
deltoideus (a)—Encrinurus, Leptæna, Streptorhynchus (Strophonella).
demissus (a)—Avicula, Colpomya, Fucoides, Pterinea, (Caritodens).
denbowensis—Eurymyella.
dendrina—Bythopora, Helopora.
dendrocrinus—Podolithus.
densa—Corematocladus.
densiseptatum—Cyathophyllum.
dentatus (a, um)—Atrypa, Crania, Ceraurus, Diplograptus, Fucoides, Graptolites, Graptolithus, Orthis, Orthis (Platystrophia) biforata, Rhynchonella, Rhynchotrema.
denticula—Ctenobolbina.
denticulatus (a, um)—Anthophyllum, Graptolithus, Graptolithus (Monoprion), Monograptus, Raphistoma, Tetragrapsus.
dentilineatum—Heliophyllum.
dentoni—Eoharpes, Harpes.
deparcum—Orthoceras.
depauperatus (a)—Arges phlyctenoides, Ceratocephala, Corydocephalus, Pleurotomaria.
depressus (a, um)—Archæocrinus, Cyclora, Eucalyptocrinus, Illænus, Leptæna, Maclurea, Maclurites, Modiolopsis, Ophiletina sublaxa, Platyceras, Proetus, Prosserella modestoides, Reticularia (Prosserella) modestoides, Rhynchonella saffordi, Strophomena, Wilsonia saffordi.
derbyi—Lingulops.
descriptus—Cypricardites, Cyrtodonta.
desertus—Harpides, Nautilus.
deshayesii—Actinoceras.
desideratus (a, um)—Archæocrinus, Astraspis, Billingsia, Callicrinus, Cyrtolites, Elkania, Glossoceras, Obolella, Obolus (Lingulella), Phragmolites.
desmograptoides — Dictyonema flabelliforme.
desmoides—Dictyonema.
desmopleura—Eoorthis, Orthis, Orthis (Plectorthis).
desori—Zaphrentis.
desplainensis (e)—Sphyradoceras, Trochoceras.
determinatus—Proetus.
devinei—Conocephalites, Dikelocephalus, Ptychoparia.
deweyi—Ceratiocaris, Ceratiocaris (Phasganocaris), Nereites, Nereograpsus, Onchus.
diademata (um)—Blastophycus, Tretaspis.
dianthus—Eurychilina.
diapason—Dicranograptus nicholsoni.
dice—Billingsella.
dichotomus (a, um)—Camarocladia, Diamesopora, Drymotrypa, Hornera, Lithodendron, Orthis, Plectorthis, Protovirgularia, Pseudohornera, Staurograptus, Stictopora, Stricklandinia, Subretepora, Thamniscus.
dickhauti—Ischadites, Lepidolites, Receptaculites.
dicksoni—Agelacrinites, Agelacrinus.
dictæus—Modiolopsis.
dictyota—Polypora.
dictys—Cyrtoceras.
dicyclicus—Carabocrinus, Strophocrinus.
difficilis — Pattersonia, Pleurotomaria, Seelya.
diffidens—Loxoceras, Orthoceras.
diffisa—Beyrichia.
diffluens—Arachnophyllum, Strombodes.
diffusus (a)—Callograptus, Dendrograptus, Drymotrypa, Inocaulis, Pseudohornera, Retepora.
dignus—Cypricardites, Cyrtodonta.
dilatatus (um)—Cyathophyllum, Cyrtolites.
dilucula—Holopea, Turbo.
diminuens—Tellinomya (Palæoneilo).
dinorthis—Orthis calligramma.
diops—Calymene.
directus—Subulites.
discoideus (a)—Amplexopora, Calamopora, Chætetes, Dianulites, Favosites forbesi, Leptotrypa, Lyellia, Mesotrypa, Monticulipora, Monticulipora (Monotrypa), Obolella, Obolus, Obolus (Lingulella), Plasmopora, Wingia.
discreta—Columnaria alveolata.

disculus—Bellerophon, Oxydiscus.

discus (um)—Favosites, Ophileta, Rhombodictyon.

disjunctus (a)—Cyrtolites, Eccyliopterus, Ophileta, Strophostylus cyclostomus.

dispandum—Streptelasma.

dispar—Actinopteria, Eophyton, Scolithus, Trochonema.

disparilis—Atrypa, Atrypina, Cœlospira, Leptocœlia, Orthis, Trematospira.

dissimilaris — Cladograpsus, Dicranograptus, Diplograptus.

dissimilis—Corynotrypa, Frammia, Stomatopora.

dissolutus—Serpulites.

distans—Actinoceras tenuifilum, Arachnophyllum (Strombodes) mamillare, Cornulites, Eccyliomphalus, Endoceras, Graptolithus (Prionotus) sedgwickii, Heliolites subtubulatus, Monograptus, Nemagraptus gracilis, Ormoceras tenuifilum, Rafinesquina, Tentaculites.

distincta (um)—Ceramoporella, Cyathophyllum, Huronia.

distorta—Carpomanon stellatimsulcatum, Escharina.

divaricans — Palæophyllum Streptelasma.

divaricatus (a)—Buthotrephis, Dicellograptus, Dicellograptus moffatensis, Dichograptus, Dicranograptus, Didymograpsus, Didymograptus, Graptolithus, Helopora, Inocaulis, Rhombopteria divaricata, Sedgwickia, Technophorus, Whiteavesia.

divergens—Amphigraptus, Cœnograptus (Pleurograptus, Pterograptus), Columnaria, Dendrograptus, Graptolithus, Hallia Parastrophia, Pentamerus.

diversus (a)—Callopora, Clitambonites, Dermatostroma, Orthisina.

dividuum—Eridophyllum.

divisa—Hallia.

dixonensis—Maclurea bigsbyi, Maclurites bigsbyi, Receptaculites, Subulites, Vanuxemia.

dixoni—Orthostrophia, Strophonella.

docens—Liospira, Pleurotomaria.

dodgei—Schizambon.

dolatus (a)—Lingula, Obolus.

dolomiticus (a)—Orthotropia, Sphærocystites.

donaciformis—Ctenodonta, Nucula,
linomya.

doneti—Strophomena.

dorsicornis — Leperditella, Leperd
Primitia.

douglassi—Oncoceras.

dowlingi—Gyronema.

downingiæ—Phacops, Phacopidella.

dresbachense—Cyrtoceras.

drummondense—Clathrodictyon.

drummondi—Omphyma, Orthocera

dryope—Eotomaria. Pleurotomaria.

dubiaformis—Ctenodonta.

dubius (a, um)—Ampheristocrinus,
pa, Bathyurus, Calymene, Cody
nus, Crania, Ctenobolbina, Cteno
Dendrograptus, Dianulites, Diplo
Gilbertsocrinites, Glossina, Gonio
Hemitrypa, Homotrypella, Hyo
Lampterocrinus, Lichenocrinus,
gula, Lyonsia, Mesoplæaster, Me
ma, Modiolopsis, Monticulipora,
aster, Palæoglossa, Periechocrinu
ronopora, Phyllograptus, Platyc
Platycrinus, Protorhyncha, Pt
tya, Pycnosaccus, Reticularia,
chonella, Rhynchorthoceras, Sp
Stenotheca, Tellinomya, Troc
nus.

dufresnoyi—Actinoceras.

dumalis—Callopora, Hallopora.

dumosa—Homotrypa, Stictoporella.

dunleithense—Cyrtoceras

duplicata (um)—Cameroceras, Endo
Gyronema, Primitia, Trochonema

duplicimuratus—Schizambon.

duplicostatum—Gyroceras.

durhamensis—Eotomaria, Labechia
nomerella, Pleurotomaria, Poleu
Polytropis.

duryi—Beyrichia, Ctenobolbina.

duseri—Orthoceras.

dychei—Leptotrypa, Modiolopsis,
culipora, Monticulipora (Monot
Prioniodus, Stigmatella.

dyeri — Ancistroceras, Asaphoidi
Conradella, Crania, Cyrtolites, D
crinus, Glyptocrinus, Holocystit
chenocrinus, Orthoceras, Pal
Phragmolites, Poteriocrinites,
palæaster, Trematis, Trocholites.

eatonensis (e)—Cyrtoceras (Glypto
Glyptodendron, Trigonodictya.

eatoni—Dikelocephalus, Discoceras, Lituites, Paradoxides, Platycolpus, Stromatocerium.
eboraceus—Dalmanites, Pterygometopus.
eccentrica (um)—Aspidopora, Monticulipora, Monticulipora (Heterotrypa), Trochonema.
echinatus (a)—Dekayella prænuntia, Eridotrypa, Glossograptus, Mesotrypa, Squamaster, Trematopora.
edax—Orthoceras.
edgewoodensis—Calvinia, Dalmanella.
edmundsi—Chonetes, Whitfieldella.
eduliformis—Mytilarca, Streptomytilus.
edwardsii—Asaphus.
effusa—Primitia mundula.
egani—Dimerocrinus, Encrinurus, Endoceras, Eucalyptocrinus, Eucalyptocrinus (Hypanthocrinus), Glyptaster, Monomorella, Periechocrinus, Saccocrinus, Thysanocrinus.
egena—Leperditia hisingeri.
ekwanensis (e)—Bronteus, Camarotœchia, Goldius, Orthoceras, Trimeralla.
elderi—Lingula.
eldonensis—Hybocystis.
electra—Dalmanella, Orthis.
elegans—Apiocystis, Apiocystites, Arabellites, Bistramia, Callograptus, Chætetes, Conradella, Cyrtolites, Discotrypa, Fenestella, Helopora, Heliolites, Hercocrinus, Holocystites, Lecanocrinus, Monograpsus, Monograptus, Monticulipora, Nemagraptus, Nucleospira, Pachydictya, Phragmolites, Plasmopora, Pleurocystis, Pleurocystites, Prioniodus, Protaster, Pterinea, Pycnostylus, Sagenella, Strophostylus, Tæniaster, Taxocrinus.
elegantulus (a, um)—Aspidopora, Callopora, Conocardium, Dalmanella, Encrinurus, Hallopora, Leptæna transversalis, Lingula, Lingula (Pseudolingula), Orthis, Orthoceras, Ptilodictya, Receptaculites, Stictopora, Strophomena.
elevatus (a, um)—Cyclonema, Eotomaria, Holopea obsoleta, Lophospira, Murchisonia, Scævogyra, Scalites.
elginensis—Ceraurus.
ella—Cybele, Cybeloides, Cyclocœlia Encuclodema, Orthis, Plectorthis.
ellesi—Didymograptus.
ellesmerelandi—Platyceras.
ellipsiformis—Lingula.
ellipticus (a, um)—Aparchites, Avicula, Bathyurus, Bucania, Caryocrinites, Caryocrinus, Cleidophorus, Ctenodonta, Cuneamya, Eucalyptocrinus, Lingula, Orthodesma, Palæaspis, Petigurus, Phragmoceras, Psiloconcha, Pterinea, Receptaculites, Strophomena, Tellinomya.
ellsi—Lingulella, Obolus.
elongatus (a, um)—Bumastus, Camarium, Cameroceras proteiforme, Clidophorus, Closterocrinus, Corynotrypa, Drepanella, Endoceras, Endoceras proteiforme, Fusispira, Goniurus, Hallicystis, Holopea, Homeospira schucherti, Idiocrinus, Ischadites, Ischyrodonta, Leperditia, Lepidolites, Lingula, Obolus (Westonia), Pseudocrinites, Receptaculites, Stephanocrinus, Stomatopora, Stomatopora dissimilis, Streptorhynchus, Stribalocystis, Strophomena, Strophomena planumbona, Subulites, Subulites (Loxonema).
elora—Euomphalopterus, Pleurotomaria, Stromatoporella.
eloroidea—Pleurotomaria.
elrodi—Acacocrinus, Barrandeoceras, Conocardium, Eucalyptocrinus,Gyroceras.
emacerata—Actinopteria, Atrypa, Avicula, Dalmanella, Dalmanella testudinaria, Dicranopora, Orthis, Pterinea, Ptilodictya, Rhynchonella.
emaciata—Constellaria, Constellaria florida, Ctenobolbina, Ctenobolbina ciliata, Pachydictya, Strophomena.
emarcescens—Ptilodictya expansa.
emarginatus (a)—Lichas, Orthis oblata, Rhipidomella.
eminula—Lyellia.
emma—Cypricardites, Cyrtodonta, Rhytimya.
emmonsi—Bucania, Canadocystis, Cytherina, Lesueurilla, Maclurea, Maclurites, Malocystites, Sigmacystis.
emoryi—Asaphus, Isotelus, Onchometopus.
endoceroidea—Cylindrocœlia.
ensiformis — Graptolithus, Phænopora, , Ptilodictya, Retiolites, Trigonograptus.
eos—Gomphoceras.
epidermata—Bythotrypa, Crepipora, Favositella, Monticulipora.
epitome—Eunema, Trochonema.
equanensis—Trimerella.

equilatera—Beyrichia, Riberia nuculitiformis.

equiradiata—Atrypa, Rhynchospira.

equisetalis—Cladopora.

erastusi—Bumastus, Illænus.

erato—Metoptoma, Tryblidium.

erectus (a)—Ambonychia, Clidophorus, Clionychia, Crateripora, Dendrograptus, Whitfieldella.

eriensis—Eurypterus, Spirifer (Delthyris).

erigone — Eunema, Trochonema (Eunema).

eriphyle—Cyathophyllum, Omphyma.

erraticus (a, um)—Catazyga, Columnaria, Dendrocrinus, Orthis, Orthoceras (Eu-Orthoceras), Orthonomæa, Zygospira.

eruciforme—Eridophyllum.

eryx—Cheirurus, Pseudosphærexochus.

escanabiæ—Eoharpes, Harpes.

escasoni—Lingulella, Obolus, Westonia.

escharoides—Catenipora.

estella—Archinacella, Cœlocaulus, Metoptoma, Murchisonia, Tryblidium.

etheridgii—Diplograptus.

etna—Euconia, Pleurotomaria.

eubule—Metoptoma, Tryblidium.

eucharis—Glossograptus, Helicotoma, Retiograpsus, Retiograptus.

eucheirocrinus—Podolithus.

eudocia—Orthis.

eudora—Spirifer (Eospirifer).

eugenia—Liospira, Pleurotomaria.

eugium—Cyrtoceras.

euglyphus (a)—Diplograptus, Diplograptus (Glyptograptus), Leptæna, Strophomena, Strophonella.

euodus—Didymograpsus, Didymograptus.

euorthis—Orthis calligramma, Orthis flabellites.

eurekensis—Illænurus, Symphysurus.

eurydice—Straparollina, Straparollus.

euryone—Cyathophyllum, Orthis.

eva—Lingula, Rhynchonella.

evadne—Dalmanella, Orthis.

evax—Homœospira, Retzia, Rhynchospira.

everetti—Pachydictya.

exactus—Subulites.

excavatus (a)—Ambonychia, Clionychia, Eucalyptocrinus cornutus, Glycerites sulcatus, Lecanocrinus.

excedrinus—Encrinurus.

excellens—Modiolopsis, Phænopora, Ptilodictya, Stictoporella.

excelsa—Holopea.

excentrica—Crania, Orbicula.

excrescens—Cyathospongia.

excretus—Favosites.

exculptus—Palæaster, Promopalæaster.

exfoliata—Hebertella, Plectorthis.

exiguus (a, um)—Atrypa, Bellerophon, Bucania, Clinoceras, Cyrtoceras, Eridotrypa, Heliolites, Heterocrinus, Lingulella (Lingulepis), Lyellia, Oncoceras, Protocrisina, Protozyga, Rhinidictya, Spirifer, Stictoporella.

exilis (e)—Cœnograptus, Dicellograptus sextans, Dicranograptus furcatus, Heterocrinus, Homotrypa, Modiolopsis, Nemagraptus, Ohiocrinus, Stenocrinus, Stephanograptus, Trochonema.

eximius (um)—Arachnophyllum, Climacograptus putillus, Strombodes.

exornatus (a, um)—Orthoceras, Pleurocystites, Pleurocystites filitextus, Pleurocystis.

expansus (a, um)—Alveolites, Anthophyllum, Bathyurellus, Bellerophon, Bucania, Bucanospira, Ceramopora, Chætetes, Clioderma, Crateripora lineata, Dekayia ulrichi, Delthyris, Dictyonema, Euomphalus, Meristina, Oncoceras, Orbignyella, Phænopora, Pterøtheca, Ptilodictya, Ptychophyllum, Salpingostoma, Streptelasma, Streptoplasma, Whiteavesia.

explanator—Piloceras.

explanatus (a, um)—Carinaropsis, Cera- Limopora, Ceramopora (Lichenalia), Liouclema, Metoptoma, Nemagraptus, Phænopora.

explicans—Ptilodictya.

explorator—Orthoceras.

exponens—Conchidium.

exporrectus (a)—Anomites, Cyrtia.

exserta (um)—Stenotheca, Tryblidium.

exsul—Alveolites, Callopora, Lioclema.

extans—Asaphus, Atrypa, Bathyurus, Camarella, Streptelasma (Zaphrentis), Triplecia, Triplesia.

extensus (um)—Didymograptus, Eucalyptocrinites, Eucalyptocrinus, Graptolithus, Graptolithus (Monoprion), Tarphyceras.

extenuatus (a, um)—Didymograpsus, Ectomaria, Ectomaria prisca, Graptolithus, Murchisonia, Opisthoptera, Solenospira, Solenospira prisca, Technophorus.
faba—Colpomya, Leperditia, Lyonsia, Modiolopsis, Nuculites.
fabaformis—Modiolopsis.
faberi—Agelacrinites, Agelacrinus, Chirospongia, Clidophorus, Cyrtoceras, Gomphoceras, Holocystites, Lepidodiscus, Lichas, Modiolopsis, Orthodesma, Orthonotella, Palæoconcha, Platycystites, Pyanomya, Rhytimya, Sphenolium, Technophorus.
fabius—Agnostus.
fabula—Cleidophorus, Clidophorus (Nucula), Clidophorus (Nuculites).
fabulina—Leperditia hisingeri.
fabulites—Cytherina, Leperditia.
facetus—Cyathophyllum.
facula—Sceptropora.
fairchildi—Euomphalus.
fairmountensis—Dalmanella.
falcatus—Eunicites.
falciformis—Escharopora, Ptilodictya.
falconeri—Glaucocrinus.
falesi—Monticulipora, Prasopora.
falx—Cyrtoceras, Mælonoceras.
famelicus—Ptilodictya.
fanningana (um)—Ditœcholasma, Duncanella, Petraia.
farcimen—Gyroceras.
farctus—Pachydictya, Ptilodictya.
farnsworthi—Aphetoceras, Lituites, Tarphyceras.
farringtoni—Habrocrinus.
fasciatus (a)—Cyathocrinus, Hebertella, Hebertella (Schizonema), Hebertella (Schizoramma), Leptæna, Lophospira, Orthis, Orthostrophia (Sch)izoramma, Rafinesquina, Strophomena.
fascicularis—Drymopora, Syringopora (Drymopora).
fastigiatum—Clathrodictyon.
fatua (um)—Trichonema, Trochonema (Eunema).
fausta—Hebertella, Ophileta, Orthis.
favosa—Calamopora, Favosites.
favosideus (a)—Favistella, Favosites.
favositiformis—Parallelopora.
favositoidea—Calapœcia.
favosus—Favosites.
favus—Nidulites.
fayettensis—Calymene.
featherstonhaughi—Cyrtoceras.
fecunda—Ctenodonta, Nucula (Tellinomya).
feildeni—Stropheodonta.
fenestelliformis—Pachydictya, Phænopora, Ptilodictya.
fenestratus (a)—Amplexus, Anthaspidella, Echinocrinites, Echinocrinus, Echinoencrinites, Phylloporina, Retepora, Rhinidictya, Stictopora, Subretepora, Sulcopora, Tetracystis.
ferox—Nautilus.
ferrisi—Metopolichas.
ferruginea (um)—Avicula, Cypricardites, Cyrtodonta, Lingulella, Nuculites (Cleidophorus).
fertilis (a)—Batostoma, Batostoma circulare, Orthis (Dalmanella).
ferum—Orthoceras, Spyroceras.
festinata—Camarotœchia.
fibrata (um)—Syringopora, Tetradium.
fibrosus (a)—Alveolites, Calamopora, Cladopora, Hindia, Stenopora.
ficellostriata—Homœospira.
fidelis—Stictopora.
fieldeni—Amplexus, Halysites catenularia.
filiasa—Amplexopora, Chætetes, Leptotrypa, Monotrypa, Monticulipora.
filiciformis—Buthotrephis, Chloephycus, Strophostylus.
filiformis (a)—Didymograptus, Orthoceras.
filiosa—Amplexopora, Monticulipora.
filiramus—Dictyonema.
filistriatus (a)—Ctenodonta, Rafinesquina winchesterensis, Strophonella, Technophorus.
filitextus (a, um)—Hemipronites, Leptæna, Pleurocystis, Pleurotomaria, Streptorhynchus, Strophomena.
fillmorensis—Cyrtodonta affinis, Cyrtolites retrorsus, Lophospira, Primitia, Primitiella.
filmorensis—Prasopora insularis.
filosus (a, um)—Crania, Cyrtoceras, Cyrtolites, Dalmanella emarcerata, Obolus, Orbicula, Orbiculoidea, Rauffella, Schizocrania, Trematis, Turrilepas.

fimbriatus (a)—Acidaspis, Alepidaster, Aparchites, Ceratocephala, Conradella, Cyrtolites, Glyptocrinus, Klœdenia, Leperditia, Pachydictya, Phænopora, Phænopora canadensis, Phragmolites, Protasterina (Protaster), Protasterina, Ptilodictya, Reteocrinus.

finalis—Apatokephalus, Dicellocephalus.

finei—Palæaster, Mesopalæaster.

finitimus—Cypricardites, Crytodonta.

firma—Anthaspidella, Pachydictya.

fiscellostriatus—Bellerophon, Bucania.

fischeri—Atops, Constellaria, Triarthrus.

fissicosta—Opisthoptera, Orthis, Plectorthis.

fissiplica—Dalmanella, Hebertella (Schizonema), Hebertella (Schizoramma), Orthis, Orthostrophia (Schizoramma).

fissiplicata—Orthis flabellites.

fissistriata — Hebertella (Schizonema), Hebertella (Schizoramma), Orthostrophia (Schizoramma).

fissus—Schizambon.

fitchi—Loxonema.

fittoni—Calathium.

flabella—Atrypa, Orthis, Platystrophia.

flabellaris—Homotrypa, Monticulipora.

flabellata—Chiloporella, Clathropora, Diastoporina, Fistulipora, Lasiothrix, Stictoporella.

flabellifer—Brontes, Bronteus, Goldius.

flabelliformis (e)—Dictyonema, Fenestella, Gorgonia, Rhabdinopora.

flabellites—Orthis.

flabellula (um)—Orthis.

flabellum—Inocaulis, Licrophycus, Orthis.

flaccidus — Graptolithus, Graptolithus (Monoprion), Leptograptus, Mastigograptus.

flagellifer—Ctenopyge, Leptoplastus, Olenus, Sphærophthalmus.

flagellum—Ptilodictya.

flanaganensis—Allonychia.

flavius—Orthoceras.

flemingii—Graptolithus, Monograptus.

fletcheri—Chætetes, Discina, Sphærophthalmus.

flexilis — Clonograptus, Dichograpsus, Graptolithus, Graptolithus (Dichograptus), Grapolithus (Monoprion), Strophomenes.

flexuosus (a)—Alepidaster, Conchicolites, Cornulites, Dendrograptus, Paleophycus, Protaster, Protasterina, Ptilodictya, Seriatopora, Spirorbis, Stictoporella, Striatopora, Tentaculites.

florealis—Amygdalocystis, Amygdalocystites.

florencevillensis—Isotelus.

floridensis—Pleurotomaria.

floridus (a, um)—Callopora, Constellaria, Eucalyptocrinites, Lioclema, Nicholsonella.

florifera—Anthaspidella.

floriforme—Ptychophyllum.

flos—Cyathophyllum, Heliophyllum.

fluctuata (um)—Cyclonema, Cyclonema bilex.

fluctuosa—Strophomena.

fluitans—Dendrograptus.

foerstei—Heterotrypa, Mytilarca.

foggi—Spirifer (Eospirifer).

foliaceus (a)—Ceramopora, Dekayella, Diplograptus, Diprion, Graptolithus, Meekopora, Ptylograpsus, Ptilograptus, Retepora.

foliata—Pachydictya.

foliosus—Diplograpsus.

folium—Graptolithus, Phyllograptus.

follis—Plasmopora.

fontinalis—Dinorthis, Strophomena.

forbesi—Beyrichia, Calamopora, Cheirocrinus, Chirocrinus, Deiphon, Discina, Favosites, Glyptocystites, Lingula, Theca.

forcipiformis—Didymograptus.

formosus (a, um)—Bathyurellus, Calathium, Conularia, Dicranograptus, Helopora, Licrophycus, Nematopora, Orthoceras, Pterinea, Receptaculites, Retzia, Rhynchonella, Rhynchospira, Rhynchotrema, Stenochisma, Trematospira, Waldheimia.

fornicatus (a)—Actinopteria, Barrandella, Ciorinda, Pentamerus.

fornshelli—Glyptocrinus.

fosteri—Cyrtoceras, Cyrtorhizoceras, Orthoceras.

fountainensis—Modiolopsis.

foxense—Orthoceras.

fracta—Rafinesquina alternata, Strophomena, Strophomena alternata.

fragaria—Macronotella.

fragilis (e)—Cyrtoceras, Dicranopora, Helopora, Nematopora, Œnonites, Oncoceras, Ptilodictya, Rhabdaria, Sedgwickia, Stictopora, Trematis.
fragosus—Cypricardites, Vanuexmia.
frankfortensis — Bucania, Cyphotrypa, Dolichopterus, Hebertella, Leperditia cæcigena, Orthis, Orthoceras (Spyroceras).
franklinense—Actinostroma, Clathrodictyon, Orthoceras.
franklini—Favistella.
fraternus (um)—Bathyurellus, Bellerophon, Illænus.
fredericus—Eccyliomphalus.
fredricki—Pterygometopus.
freitana—Dalmanella, Orthis.
fringilla—Camarotœchia, Rhynchonella.
frobisherensis—Ctenodonta.
frobisheri—Cyphaspis, Eurychilina, Primitia.
frondifera—Stictoporella.
frondosus (a)—Alecto, Aulopora, Callopora, Ceramophylla, Chætetes, Clathropora, Dekayia, Dendrograptus, Hallopora, Heterotrypa, Homotrypa, Homotrypa flabellaris, Monticulipora, Monticulipora (Peronopora), Proboscina, Phyllodictya, Rhinopora, Stomatopora.
frontalis—Leperditia.
fronticola—Leperditia.
fruticosus (a)—Bythopora, Callithamnopsis, Cœnites, Dendrograptus, Didymograptus, Graptolites (Didymograpsus), Graptolithus, Graptolithus (Monoprion), Limaria, Oldhamia, Tetragrapsus, Tetragraptus, Tetragraptus (Bryograptus).
fucoidea—Rauffella.
fulcrata (um)—Ctenobolbina, Ptychophyllum.
fulgur—Actinoceras, Orthoceras.
fultonensis—Cyrtoceras, Dalmanella.
funata—Hormotoma, Murchisonia.
fungiformis—Astrea, Hexaporites.
fungosus (um)—Receptaculites.
fungulus—Baryphyllum.
funiculus—Palæophycus.
furcatus (a)—Dicranograptus, Graptolithus, Prioniodus, Rhabdaria.
furcifer (um)—Cruziana, Dictyonema.
furcillatus—Calceocrinus, Castocrinus, Didymograpsus murchisoni, Didymograptus.
furtivum—Orthoceras, Protocycloceras.
fusibrachiatus—Macrostylocrinus.
fusiformis (e)—Chætetes, Lioclemella, Monticulipora, Orthoceras.
fustiformis—Sceptropora.
futilis (e)—Dalmanella, Dalmanella testudinaria, Oncoceras, Orthis.
gainesi—Cyathaxonia.
galba—Agnostus, Arthrorachis.
galeatus (a)—Atrypa, Gypidula, Pentamerus, Sieberella.
galenensis (e)—Cyphaspis, Haploconus, Lingula riciniformis, Lingulasma.
galtensis (e)—Cœnostroma, Eotomaria, Euomphalus, Ilionia, Obolellina, Obolus, Pleurotomaria, Prolucina, Rhynobolus, Stromatopora.
gamma—Asaphus.
ganti (i)—Cypricardites, Cyrtodonta, Modiolodon, Strophonella.
gaspensis—Favosites.
gaspiensis—Stricklandia, Stricklandinia.
gattingeri—Conularia.
gebhardi — Apiocystites, Lepocrinites, Lepocrinus.
geinitzanus—Clathrograptus, Ptilograptus, Reteograptus, Retiograptus.
gelasinosa—Homotrypa, Monticulipora.
gemelliparum—Endoceras.
geminus—Didymograpsus.
gemma—Acrotreta.
gemmatus—Chaunograptus.
gemmeus—Rhaphanocrinus.
gemmicula—Orthidium, Orthis.
gemmiferum—Heliophyllum.
gemmiformis—Pisocrinus, Stephanocrinus.
gemmulus (a)—Cystiphyllum, Leptobolus, Obolella.
geniculatus (a, um)—Brachyprion, Dicranograptus spinifer, Heterocrinus, Stenocrinus, Stropheodonta, Strophodonta, Strophonella, Strophoprion.
geometricus—Carabocrinus, Goniograptus, Streptelasma, Streptelasma calicula.
georgiæ—Conchidium.
germanus (a, um)—Aristophycus ramosum, Cypricardites, Cyrtodonta grandis, Dinorthis meedsi, Glyptocrinus shafferi, Leperditella, Leperditia, Orthis meedsi, Orthis (Dalmanella) meedsi, Pycnocrinus.
geronticus (a)—Spirifer (Eospirifer), Strophomena planumbona.

gesneri—Endodesma, Modiolopsis.

gibbera—Cyrtodonta, Leperditia, Leperditia hisingeri, Primitia.

gibberosum—Ascoceras.

gibberulus (a)—Ctenodonta, Didymograptus, Didymograptus (Isograptus), Dolichometopus, Isograptus.

gibbosus (a, um)—Arabellites, Atrypa, Ctenodonta, Dalmanella, Dictyonella, Eichwaldia, Eucalyptocrinites, Eucalyptocrinus, Eurystomites, Leptaena, Lingula, Lyonsia, Oncoceras, Orthis, Orthis subaequata, Pianodema subaequata, Plectambonites, Pyanomya, Spirifer, Spirifer (Eospirifer), Strophomena, Tellinomya, Trilobites Vanuxemia.

gibbus—Modiolodon.

giganteus (a, um)—Anomalodonta, Camarotœchia, Cyrtoceras, Cryptozoon, Eurypterus, Homalonotus, Leperditia, Murchisonia, Pachydictya.

gigas—Asaphus, Asaphus (Isotelus), Astrea, Isotelus, Rhodocrinus, Strombodes.

gilberti—Trimeroceras.

gilpeni—Stropheodonta, Strophomena.

girardeauensis—Cyphaspis.

glabellus (a)—Cypricardites, Cyrtodonta, Pisocrinus.

glaber (ra)—Homotrypa, Leperditella, Leptæna, Lyellia, Plectambonites, Primitia, Propora, Sarcinula (Porites), Triarthrus.

glacialis—Camarotœchia, Rhynchonella, Shumardia.

gladiola—Ptilodictya.

glandicephalus—Bathyurus, Bathyurus (Bathyurellus).

glans—Gomphocystites.

glaucus—Ceraurus (Nieszkowskia), Cheirurus, Orthoceras.

glenelgensis—Rosenella.

globata—Stigmatella.

globicaudatus—Pterygotus.

globiceps—Pterygotus (Erettopterus).

globosus (a)—Bumastus, Caryocrinites, Caryocrinus, Cyathocrinites, Cyathocrinus, Cyclocrinus, Holocystites, Illænus, Menocephalus, Monotrypa, Pasceolus, Peronosporites, Rhombodictyon, Rhynchospira, Trematospira, Triacrinus, Waldheimia, Wilsonia, Zophocrinus.

globularis (e)—Bellerophon, Lioclema, Receptaculites, Sinuites, Sphærocystites, Stromatotrypa.

globulosus (a)—Gypidula, Pentamerus.

glomeratus (a)—Clathropora, Sphærococcites, Stictopora.

glypta (um)—Dermatostroma, Orthis.

goldfussi (i)—Calamopora, Columnaria, Conotubularia, Cyathophyllum, Eucalyptocrinites, Eucalyptocrinus, Favosites, Lyopora, Ortnoceras, Symphysurus.

goliath—Cyathophyllum.

goniata—Ceratocephala.

goniocercus—Asaphus, Megalaspis.

goniumbonata—Whitella.

goniurus—Asaphus, Megalaspis.

gonopleura—Pleurotomaria.

goodhuensis—Callopora, Hallopora, Hormotoma gracilis.

goodlandensis—Eatonia.

goodnovi—Sphærocoryphe.

goodridgii—Dalmanites, Pterygometopus.

gorbyi—Bellerophon, Cyphocrinus, Eucalyptocrinus, Holocystites, Myelodactylus, Orthoceras, Periechocrinus, Pisocrinus, Saccocrinus, Striatopora, Stribalocystites.

gordoni—Aparchites, Pseudocrinites, Uncinulus.

gorgonea—Helicotoma.

gothlandicus (a, um)—Calamopora, Corallium, Favosites.

grabaui—Callograptus.

gracia—Holopea.

gracilens—Hormotoma, Murchisonia.

gracilis (a)—Acervularia, Actinoceras, Aphyllostylus, Arca, Astræophyllum, Batostomella, Buthotrephis, Bythopora, Bythotrephis, Calymene, Catenipora, Chætetes, Chasmatopora, Cheirocrinus logani, Cladograpsus, Clathropora, Cœnograptus, Conularia, Cornulites flexuosus, Cornulites clintoni, Corynoides, Crania, Cyathophyllum, Cyclonema, Cyrtoceras, Dendrocrinus, Dendrograptus, Dictyonema, Didymograptus, Discosorus, Eunicites, Fenestella, Fucoides, Graptolites (Didymograptus), Graptolithus, Glyptocystites, Glyptocystites logani, Halysites catenulatus, Helicograptus, Heterocrinus, Homocrinus, Homotrypella, Hormoceras, Hormotoma, Isochilina, Leperditia,

gracilis—continued. Monograptus, Monticulipora, Monticulipora meeki, Monticulipora (Heterotrypa), Murchisonia, Nemagraptus, Nereites, Nereograpsus, Ormoceras, Piloceras, Poterioceras, Poteriocrinites, Poteriocrinus, Reteocrinus, Retepora, Stephanograptus, Strombodes, Subretepora, Subulites, Triplecia.

gracilissimus (m)—Plumulites, Turrilepas.

gracillimus (m)—Chondrites, Chondrites (Trichochondrites), Dendrograptus, Mastigograptus, Psilophytum.

graftonensis (e)—Bumastus, Discoceras, Illænus, Lituites.

grahami—Ptilodictya.

graminifolia—Stictopora.

grandæva—Billingsella, Orthisina.

grandis (e)—Anthaspidella, Byssonychia, Ceratiocaris, Conradella, Cypricardites, Cyrtodonta, Dichotrypa, Dictyonema, Didymograptus nitidus, Ectenocrinus, Eusarcus, Heterocrinus simplex, Holopea, Homotrypa, Illænus, Isochilina, Leperditia, Leptobolus, Lingulella laevis, Lyrodesma, Monticulipora, Orthodesma, Parabolina, Parabolina heres, Prasopora, Psiloconcha, Pterygotus (Erettopterus), Rhinidictya, Stenaster, Trimerella, Urasterella.

grandulosum—Carpomanon.

granilabiatus—Aparchites, Leperditia.

granilineatum—Cystiphyllum.

granistriata—Chasmatopora, Phylloporina, Protowarthia, Sinuites.

granosa—Eurychilina, Helicotoma, Nematopora.

granti (i)—Acanthograpsus, Acanthograptus, Astroconia, Aulocopina, Buthotrephis, Bythocypris, Callograptus, Eoharpes, Harpes, Inocaulis, Lingulops, Mesopalæaster, Odontocaulis, Palæaster.

granulatus (a, um)—Caryocrinites, Chalazodes, Conularia, Cystaster, Haplocrinites, Haplocrinus, Hemicystis, Hemicystites, Symbathocrinus, Synbathocrinites, Synbathocrinus, Trematopora.

granuliferus (a)—Alepidaster, Batostomella, Chætetes, Homotrypella, Monticulipora (Fistulipora), Protaster, Retzia, Retzia (Trematospira), Rhombopora, Tæniaster, Trematopora, Trematospira.

granulosus (a, um)—Amplexopora, Alveolites, Arachnophyllum, Beyrichia, Calymmene callicephala, Ceraurus, Crania, Crepicephalus (Loganellus), Fenestella, Macrostylocrinus, Macrostylocrinus striatus, Mariacrinus, Palæaster, Pisocrinus, Promopalæaster, Ptilodictya, Ptychoparia, Shumardia.

graptolithinum—Dictyonema.

grayi (i)—Atrypa, Streptis, Terebratula.

greenei (ii)—Anisocrinus, Chonophyllum, Conchidium, Lecanocrinus, Monomorella, Parastrophia.

gregalis—Modiolopsis.

gregarius (a, um)—Astylospongia, Buthotrephis, Conchicolites, Cyclocrinus, Dendrocrinus, Hindia, Isochilina, Microspongia, Monograptus, Nidulites, Orthoceras, Pasceolus, Petigopora, Pleurotomaria, Primitia.

gregwa—Obolus (Lingulepis).

grenvillensis (e)—Rusophycus, Rusichnites.

guelphensis—Holopea, Pycnostylus.

guelphica—Hermatostroma, Leperditia balthica, Leperditia phaseolus, Lophospira, Murchisonia.

gurleyi—Dicellograptus.

gyracanthus—Asaphellus, Echinus, Tentaculites.

gyrinus—Holocystites.

gyroceras—Eccyliomphalus, Euomphalus.

hæsitans—Orthoceras.

hageri—Cyclonema, Orthoceras.

haguei—Crepicephalus (Loganellus), Liostracus, Ptychoparia.

hainesi—Cypricardites, Ortonella.

halei—Eotomaria, Euomphalopterus, Pleurotomaria, Trochonema.

hallanus (m)—Orthoceras, Streptorhynchus.

halleanus—Cyrtoceras.

halli (i)—Acidaspis, Amphilichas, Ampyx, Asaphus, Beyrichia, Bollia, Bucania, Buthotrephis, Calceocrinus, Ceratocephala, Chasmatopora, Columnaria, Crania, Cyclocrinus, Cyclocystoides, Cypricardites, Cyrtodonta, Dalmanites, Deltacrinus, Dimerocrinus, Fistulipora, Gomphoceras, Gonioceras, Harlania, Klœdenella, Lichas, Lonchodomus, Odontopleura, Pasceolus, Phylloporina, Plectoceras, Pleuroto-

halli—continued. maria, Raphistoma, Rhodocrinus, Scenidium, Skenidium, Strophomena, Trematopora, Trochoceras, Thysanocrinus.

halliana (um)—Anthocystis, Cyclonema, Cyrtoceras, Favosites, Zitteloceras.

hallie—Streptorhynchus, Strophomena.

halysitoides—Tetradium.

hamatus—Arabellites.

hamburgensis—Ctenodonta, Dalmanella, Orthis, Tellinomya.

hammelli—Allocystites, Beyrichia, Caryocrinites, Caryocrinus, Ctenobolbina, Ctenobolbina ciliata, Holocystites, Lophospira, Murchisonia, Orthoceras (Dawsonoceras), Stephanocrinus, Trematocystis.

hamptoni—Pentacrinites.

handwerki—Phacops, Proetus.

hanoverensis (e)—Lichas, Orthoceras (Euorthoceras), Strophomena, Strophomena (Orthothetes).

harinensis—Spirifer.

harlani—Arthrophycus, Fucoides.

harmonia—Holopea.

harpa—Holopea, Straparollina.

harperi—Orthoceras.

harpya—Pleurotomaria.

harrietta—Cypricardites, Cyrtodonta.

harrisi—Arctinurus, Bumastus, Callopora, Compsocrinus, Glyptocrinus, Helopora, Illænus, Isotelus, Lichas, Lichas (Platynotus), Mariacrinus, Palæaster, Stenaster.

hart(t)i (i)—Conocephalites, Dicellocephalus, Dikelocephalus, Halysites catenularia, Halysites catenulatus, Orbiculoidea.

hartleyi—Jaekelocystis, Mesomphalus.

hartnageli—Ptilograptus.

hartsvillensis—Ctenodonta, Tellinomya.

hastatus (um)—Ampyx (Lonchodomus), Orthoceras, Tripteroceras.

haynianus (a) — Cypricardites, Cyrtodonta.

headi—Athyris, Catazyga, Chiastoclonella, Glassia, Graptolithus, Graptolithus (Loganograptus), Tetragrapsus, Tetragraptus.

hearsti—Actinoceras.

hector—Phragmoceras.

hecuba—Strophomena.

helderbergiæ—Bellerophon, Columnaria, Favosites.

helena—Liospira, Pleurotomaria, Rhynchospira, Trematospira.

helicites—Platyschisma, Trochus.

helicteres—Lophospira, Murchisonia.

heliophylloides—Cylindrohelium.

hemiaster—Streptorhynchus.

hemiplicatus (a)—Anastrophia, Atrypa, Camarella, Parastrophia, Pentamerus.

hemisphericus (a, um)—Alveolites, Anoplotheca, Atrypa, Cœlospira, Crepipora, Euomphalus, Fistulipora, Haplocrinites, Ischadites, Lecanocrinus, Leptocœlia, Monotrypa undulata, Monticulipora undulata, Platycrinus, Platyostoma, Receptaculites, Straparollus, Thecostegites.

hennepini—Cameroceras, Endoceras.

henrietta—Orthoceras.

hepaticus—Odontocaulis.

herculaneus—Homalonotus, Orthoceras.

hercules—Cyrtoceras, Gyroceras, Halloceras, Halloceras (Ophidioceras), Litoceras, Lituites, Nautilus, Orthoceras, Protophragmoceras.

hercyna—Murchisonia, Pleurotomaria.

heres—Parabolina.

hermione—Avicula, Lophospira, Murchisonia, Pleurotomaria, Prolobella.

hero—Prasopora.

heros—Streptoceras.

herricki—Illænus.

hertzeri — Cyrtoceras, Gomophoceras, Hexameroceras, Hexamoceras.

herzeri—Columnaria, Cyathaxonia, Kionelasma, Lindstrœmia.

hespelerensis—Lophospira, Murchisonia.

heterocostalis—Cupulocrinus, Scyphocrinus.

heterodactylus—Heterocrinus, Stenocrinus.

heterophyllus—Fucoides.

hexabrachiatus—Dichograptus.

hexagonalis—Leptotrypa, Pachydictya.

hexagonus—Caryocrinites, Caryocrinus.

hexaporites—Dianulites petropolitanus.

hieroglyphicus—Diabolocrinus.

higginsportensis—Strophomena.

hilli—Ctenodonta, Escharopora, Ptilodictya, Tellinomya.

hiltonensis—Licrophycus.

hincksii—Asaphus.

hindei—Arabellites, Orthoceras, Stromatopora.
hindi (i)—Astropolithon, Cypricardites, Cyrtodonta, Stephanella, Stromatopora, Whitella.
hippolyta—Straparollus.
hippolyte—Orthis.
hirsuta—Ataçtopora.
hisingeri — Conocephalites, Cytherina, Dictyonema, Dikelocephalus, Favosites, Leperditia, Lisania.
hispidus (a)—Acanthodictya, Favosites.
historicum—Eunema, Gyronema.
hitzi—Cyrtoceras, Orthoceras (Ormoceras).
hoffmanni—Cyclora.
holbrooki—Agelacrinites, Agelacrinus.
holiensis—Dalmanella.
holopiformis—Acanthonema.
holstoni—Orthis.
homalonotoides—Asaphus, Isoteloides.
homfrayi—Asaphellus, Asaphus, Asaphus (Isotelus).
homolostriata—Stropheodonta demissa.
honeymani—Avicula, Pterinea.
horani—Acidaspis, Ceratocephala.
horridus—Glossograptus ciliatus.
hortensia—Pleurotomaria, Raphistoma.
hoskinsoni—Streptelasma.
hospitalis—Homotrypella, Monticulipora, Prasopora, Prasopora selwynii.
houghtoni—Cyrtoceras.
hoveyi—Brachiospongia.
howardi—Cyrtoceras, Habrocrinus, Periechocrinus, Saccocrinus, Zophocrinus.
howleyi—Lingula.
hoyi—Orthoceras, Phragmoceras, Pleurotomaria, Pleurotomaria (Trochonema).
hoyti—Pelagiella, Platyceras.
hubbardi—Holopea.
hudsoni—Ceraurus, Conularia, Endoceras, Holopea, Trochonema.
hudsonicus (a, um)—Camarotœchia, Caunopora, Conularia, Cyphaspis, Diplograpsus, Endoceras, Poleumita, Stromatopora.
humboldti (i)—Orthis.
humerosum—Cyclonema.
humilis (e)—Batostoma, Cyclonema, Cupulocrinus, Dendrocrinus, Diaphorostoma, Lophospira, Murchisonia, Palæacmæa, Rhinidictya.
hunterensis—Pleurotomaria, Polygyrata.
huntingtonensis—Oriostoma.
huntingtoni—Amygdalocystites.
hurlbuti—Lingula (Glossina), Palæoglossa.
huron(i)ensis (e)—Apiocystites, Brockocystis, Calapœcia, Cyclocystoides, Cypricardites, Cyrtoceras, Cyrtodonta, Cystiphyllum, Labechia, Lingula, Oncoceras, Orthis, Orthoceras, Stenopora, Striatopora, Stromatocerium, Strophomena concordensis, Syringolites, Syringopora, Tetradium, Trematis, Trochus.
huronica (um)—Dania, Diphyphyllum, Eridophyllum, Houghtonia.
huttoni—Asaphus, Basilicus, Ptychopyge.
huxleyi—Anomalocystites, Ateleocystites, Atelocystites, Stenaster, Urasterella.
hyale—Charionella, Murchisonia, Plethospira, Pleurotomaria, Whitfieldella.
hybrida—Orthis, Rhipidomella.
hydei—Callicrinus, Ceraurus, Cheirurus, Cryptodiscus.
hydraulicus (a, um)—Camarotœchia, Cyathophyllum, Orthothetes, Rhynchonella, Schuchertella, Streptorhynchus.
hypniformis—Graptolithus (Diplograptus).
hyrie—Metoptoma, Tryblidium.
hystrix—Glossograptus, Trichospongia.
icarus—Ceraurinus, Ceraurus, Ceraurus (Eccoptochile), Cheirurus.
ida—Acidaspis, Billingsia, Elkania, Obolella.
idahoensis—Acrotreta.
idia—Pleurotomaria.
ignicula—Orthis.
ignota (um)—Dalmanella, Dalmanella testudinaria, Orthis, Orthoceras, Orthoceras (Euorthoceras).
ilicifolius—Phyllograptus.
illænoides—Asaphus, Smyphysurus.
illinoisensis—Ambonychia, Cyclocystoides, Dalmanites, Diaphorostoma, Leperditia, Lingulops, Odontopleura, Pontocypris, Rhynchotrema.
imago—Apiocystites, Hallicystis.
imbecilis—Strophomena.
imbrex—Rafinesquina, Strophomena.
imbricatoarticulata—Astylospongia, Siphonia.
imbricatus (a, um)—Atrypa, Bucania, Byssonychia, Ceramopora, Cœloclema, Conradella, Cyrtolites, Helopora, Orthoceras, Phragmolites, Salpingostoma,

immaturus (a, um)—Conocardium, Cornulites, Diaphorostoma niagarensis, Dimerocrinus, Homœospira, Idiocrinus, Raphistoma, Rhodocrinus, Thysanocrinus.

imperator—Bumastus, Eurystomites, Hebertella, Illænus, Lituites, Orthis.

imperfectum—Batostoma, Hemiphragma, Monticulipora.

implicata (um)—Batostoma, Chætetes, Monticulipora, Monticulipora (Heterotrypa).

impolita—Anolotichia, Crepipora.

impressa—Atrypa, Crepipora, Primitia.

impudica—Buthotrephis.

inæquabile—Cameroceras, Endoceras, Suecoceras.

inæqualis—Acervularia, Calceocrinus, Castocrinus, Cladograpsus, Columnaria, Cremacrinus, Cyathophyllum, Dicranograptus, Heterocrinus, Hindia, Krausella, Octonaria, Œnonites, Prismatophyllum, Zaphrentis.

inæquivalvis (e)—Rhynchotrema, Spirifer.

incarinatum—Straparollus.

incepta (um)—Chasmatopora, Cycloceras, Fenestella, Orthoceras, Phylloporina, Polypora, Retepora, Spatiopora lineata, Spatiopora maculosa, Subretepora.

incertus (a)—Columnaria, Didymograptus, Fletcheria, Holopea, Illænus, Monotrypa, Orthonota, Strombodes.

incipiens—Phaenopora, Trochoceras.

incisolobata—Astylospongia, Caryomanon, Spongia.

incisus (a)—Diplograptus foliaceus, Lecanocrinus, Primitia mundula.

inclinata—Zaphrentis.

inclusa—Ceramoporella.

incognita—Nelimenia.

incomptus (a)—Hudsonaster, Monticulipora, Palæaster, Schmidtella.

incondita—Ceramopora.

inconspectus—Eucalyptocrinus.

inconstans—Spirifer, Vanuxemia.

incontroversa—Callopora, Hallopora.

incrassata—Leptæna, Paleschara, Rafinesquina, Strophomena.

increbescens — Atrypa, Hemithiris, Rhynchonella, Rhynchotrema.

incrustans—Ceramopora, Stenopora, Stigmatella.

incurvata—Orthis, Producta, Strophomena.

incurvus (a, um)—Anomalocrinus, Archinacella instabilis, Cornulites, Cystiphyllum, Distacodus, Eurychilina reticulata, Heterocrinus, Hybocrinus (Anomalocrinus), Machairodus, Tentaculites.

indagator—Orthoceras.

indentus (a)—Conularia, Didymograpsus, Didymograptus, Graptolithus (Monoprion), Pleurotomaria.

indeterminatus—Bumastus, Illænus.

indianensis (e)—Ascoceras, Barrandeocrinus, Calceocrinus, Camarotœchia, Caryocrinites, Caryocrinus, Cylicocrinus, Cyrtoceras, Deltacrinus, Emperocrinus, Encrinurus, Gomphoceras, Gomphocystites, Holocystites, Macrostylocrinus, Rhynchonella, Stromatopora, Tryblidium.

inexpectans—Conokephalina, Dicellocephalus, Pleurotomaria.

inexpectatus—Dicellocephalus.

infelix—Actinoceras, Calathium (Zittelella), Megistocrinus, Orthoceras, Periechocrinus, Saccocrinus.

inferior—Petalocrinus.

infida—Diplotrypa, Mesotrypa.

inflatus (a, um)—Alecto, Balanocrinus, Corynotrypa, Ctenodonta, Cupellæcrinites, Cyclonema, Cypricardinia, Cypricardites, Fusispira, Hippothoa, Lampterocrinus, Leperditia, Leperditella, Nuculites, Orthis, Orthis acutilirata, Platystrophia, Platystrophia acutilirata, Stomatopora, Strophostylus, Subulites, Tellinomya, Tuberculopora.

inflecta—Actinostroma, Actinostroma tenuifilatum, Dekayia, Heterotrypa, Heterotrypa ulrichi, Monticulipora.

inflexus — Periechocrinus, Saccocrinus (Megistocrinus).

informis—Cyphotrypa, Leptotrypa.

infrequens—Cœloclema, Conularia, Hormotoma, Murchisonia, Œnonites, Trematopora.

infundibularius (a)—Lamellopora, Strombodes.

infundibuliformis (e)—Gorgonia, Sidemina.

infundibulum (a)—Cyrtoceras, Cystostylus, Syringopora.

ingalli—Bathyurus.
ingens—Carcinosoma, Lingula.
initialis—Beyrichia, Klœdenia.
inordinata—Heliolites, Porites.
inornatus (a, um)—Alveolites, Astylospongia, Camarella, Chicagocrinus, Cyrtolites (Microceras), Dimerocrinus, Eucalyptocrinus, Euomphalus, Gazacrinus, Glyptaster, Lingula, Placentula, Psiloconcha, Lyrodesma, Microceras, Spirorbis, Thysanocrinus, Trochonema.
inoscula—Zittelella.
inquassa—Rafinesquina, minnesotensis, Strophomena.
insculptus (a)—Caryocrinites, Hebertella (Glyptothis), Orthis.
insectiformis—Cryptograptus tricornis.
insignis (e)—Aspidoceras, Bumastus, Ceraurus, Holopea, Homotrypa, Homotrypa subramosa, Illænus, Isochilina amiana, Leptobolus, Litoceras, Trochoceras.
insolens—Dinorthis carleyi, Dystactospongia, Litoceras, Nautilus, Stromatopora.
insolitum—Streptelasma.
insperatus—Glyptocrinus.
instabilis—Archinacella, Homotrypella, Metoptoma, Pachydictya bifurcata, Tryblidium.
insueta (um)—Atactoporella, Avicula, Bodmania, Pterinea, Vanuxemia dixonensis.
insularis (e)—Amphion, Bronteus, Cypricardites, Cyrtodonta, Endoceras, Goldius, Ischadites, Lingula, Monticulipora, Ormoceras, Pliomerops, Prasopora, Receptaculites.
intabulata—Monotrypa.
integritabulatus—Favosites favosus.
integumentum—Diphyphyllum, Diplophyllum.
intercalaris—Homotrypa.
intercellata—Homotrypa wortheni.
intermedius (a, um)—Ambonychia, Atactopora, Athyris, Atrypa, Atrypina, Beatricea nodulifera, Buthotrephis gracilis, Byssonychia, Ceratopsis, Clathropora, Clathropora frondosa, Ctenodonta, Cyclocrinus, Cyphaspis, Cyrtodonta grandis, Dalmanites, Dendrograptus gracillimum, Fusispira, Graptolithus, Isochilina, Leptocœlia, Lyrodesma acuminatum, Merista, Mesopalæaster, Monograptus, Nidulites,

intermedius—continued.
Oncoceras, Pasceolus, Pterygometopus, Rhynchotreta, Stictoporella angularis, Tellinomya, Whitfieldella.
internascens—Anastrophia.
internestriatus (um)—Discoceras, Lituites, Trocholites.
internodia—Dicranopora, Ptilodictya.
interplicatus (a)—Anastrophia, Atrypa, Orthis, Pentamerus.
interporosa—Batostomella, Ceramoporella, Stigmatella.
interruptum—Cyathophyllum.
interstincta—Heliolites, Madrepora, Palæopora, Stictoporella.
interstriatus (a)—Orthis, Orthothetes, Schuchertella.
intertexta (um)—Actinostroma, Zaphrentis.
intertrium—Cyathophyllum.
interventa—Columnaria alveolata.
intextus (a)—Bellerophon, Bucania.
intortus—Dicellograpsus, Dicellograptus, Ecculiomphalus, Eccyliomphalus, Saccophycus.
intralobatus—Straparollus.
intricatus—Desmograptus.
inutilis—Diplograptus.
invaginatum—Ptychophyllum.
invenusta—Leptæna gibbosa.
iole—Lingula, Lingulella.
ione—Streptotrochus.
iowensis—Asaphus (Isotelus), Cardium, Coleolus, Cybeloides, Cypricardites, Ischadites, Isotelus, Lingula, Lingulella, Receptaculites, Receptaculites (Ischadites), Selenoides, Spatipora.
ioxus—Bumastus, Illænus.
iphgenia—Ctenodonta, Dinorthis, Orthis, Plæsiomys, Tellinomya.
iphis—Obolus (Westonia).
ipomœa—Ptychophyllum.
irene—Lingula.
iris—Lingula, Lingulella.
irrasa (um)—Batostoma, Hemiphragma.
irregularis (e)—Alveolites, Anisocrinus, Ceramopora, Ceramoporella, Chætetes, Cythere, Cytheropsis, Cyrtoceras, Dictyonema, Fungispongia, Helopora, Leptotrypa, Monotrypa, Monticulipora, Orthoceras, Palæacmæa, Palæophycus, Stigmatella, Strepula, Tentaculites, Trematopora.
irvinensis—Zaphrentis intertexta.

islandicus—Cypricardites.
isodactylus—Heterocrinus.
isodorus—Cyrtoceras, Cyrtorizoceras.
isotelea—Brongniartia.
ithacensis—Strophomena.
jacksoni—Nereites, Nereograpsus.
jacobus—Isotelus.
jamesi (i)—Allonychia, Ambonychia, Batostoma, Chætetes, Cyclopora, Lepidocoleus, Megambonia, Monticulipora, Monticulipora (Heterotrypa), Orthis, Orthoceras, Palæaster, Palæasterina, Petraster, Plectorthis, Plumulites, Spyroceras.
janea—Rhynchonella.
janesvillensis—Cyrtodonta.
janus—Streptoceras.
jason—Nautilus, Plectoceras.
jerseyensis—Chonetes, Ctenodonta, Eurychilina, Klœdenia, Liostracus, Modiolopsis, Ptychopyge, Solenopleura.
jessica—Lophospira, Murchisonia.
jewetti (i)—Callocystis, Callocystites, Cupulocrinus, Dendrocrinus.
jillsoni—Ampyx.
johannensis — Clitambonites, Eoorthis, Orthis (Plectorthis), Orthisina.
johnstoni—Bathyurus.
jolietensis (e)—Holocystites, Orthoceras.
jonesi—Isochilina, Leperditia.
josephiana—Leperditia, Leperditia canadensis, Leperditia fabulites.
juglans—Caryospongia.
jugosa—Dalmanella, Orthis.
jukesi (i)—Amphilichas, Lichas (Platymetopus).
julia—Athyris, Leptæna, Meristella, Strophomena, Whitfieldella.
julius—Amphion, Pliomerops.
junceum—Orthoceras.
junciformis—Cannopora.
junctum—Amplexus.
junia—Athyris, Hyattella, Hyattidina congesta.
junior (ius)—Orthoceras (Euorthoceras).
juniperanus—Cœnites.
juvenalis—Cyrtoceras.
juvenis—Heterocrinus, Pterygotus cobbi, Stenocrinus, Zaphrentis intertexta.
kagawongensis—Rhytimya.
kalmi—Eccliopterus, Eccyliomphalus.
kankakensis—Austinella, Orthis, Plectorthis.
kassubæ—Orthis.
kayseri—Eotomaria.
keelei—Actinodictyon.
keewatinensis (e)—Actinoceras, Phænopora.
keithi—Ceratopea.
kelloggi—Eurystomites, Nautilus.
kemptotheca—Climacograptus.
kennicotti—Orthis.
kentlandensis—Orthoceras (Kionoceras).
kentonensis—Actinomya, Whiteavesia.
kentuck(i)ensis—Arthropora, Calceocrinus, Castocrinus, Caryocrinites, Caryocrinus, Cupulocrinus jewetti, Monticulipora, Porocrinus, Zygospira, Zygospira modesta.
kentuckyensis—Isochilina, Ptilodictya, Salpingostoma buelli.
kerbyi—Cyrtoceras.
keyserensis — Clidochirus, Dalmanites, Rensselaeria, Strophonella, Uncinulus, Zaphrentis.
kingi—Monomorella, Rafinesquina, Strophomena.
kingstonensis—Lingula, Nanno.
kirbyi—Cyrtoceras, Ooceras.
kjerulfi—Bryograptus, Dichograptus, Loganograptus.
klœdeni—Beyrichia.
knappi—Conchidium, Pentamerus.
knighti (i)—Conchidium, Pentamerus.
knotti—Gypidula, Heterospongia, Heterospongia subramosa, Pentamerus.
knoxensis—Archæocrinus.
knoxvillensis—Lophospira, Maclurea, Maclurites, Trochonema.
kœnigii—Ischadites.
kokomoensis—Eurypterus, Eurypterus (Onychopterus), Favosites pyriforme, Klœdenia, Rhynchonella, Wilsonia.
kruegeri—Cryptolithus, Trinucleus.
kummeli—Beyrichia, Klœdenia.
labechei—Alveolites.
labecula—Ceramopora, Ceramopora (Berenicea).
labeculosa—Spatiopora.
labellosa—Isochilina, Leperditella.
labiatus (um)—Maclurea, Phragmoceras, Raphistoma, Straparollus.
labiosa—Eotomaria, Halliella.
labrosa—Isochilina, Leperditia canadensis, Pleurotomaria.
labyrinthicus (a)—Catenipora, Girvanella, Halysites catenulatus, Ptilodictya, Stictopora, Streptospongia.

lachutense—Cryptozoon.
laciniata—Diplograpsus.
laciniosum—Platyceras.
lacunosus—Archæocrinus, Glyptocrinus.
lacustris—Eurypterus.
lælia—Crania.
læviramus—Chætetes.
lævis (e)—Amygdalocystites florealis, Atrypa, Brachiospongia, Cleiocrinus, Ctenocrinus, Cryptonymus, Cupellacrinites, Cupellacrinus, Cyrtocrinus, Dalmanella electra, Encrinurus Eucalyptocrinites, Eucalyptocrinus, Eucalyptocrinus cælatus, Graptolithus, Ichthyocrinus, Lecanocrinus, Lingulella, Melocrinus, Merista, Meristella, Monticulipora, Monticulipora consimilis, Monticulipora hospitalis, Orthis electra, Orthoceras, Phycograptus, Protaxocrinus, Rhynchonella, Rhynchonella (Stenoschisma), Strophomena, Taxocrinus, Whitfieldella.
læviusculus—Ampyx, Ampyx (Lonchodomas).
lajensis—Bathyurus.
lamarcki (i)—Orthoceras, Protocycloceras.
lambi (i)—Gonioceras, Plasmopora, Triptoceras, Tripteroceras.
lamellata—Atrypa, Camarotœchia, Lingula, Rhynchonella.
lamellosa (um)—Ambonychia, Avicula, Clionychia, Cypricardinia, Cyrtoceras, Cyrtodonta, Discina, Hyattella, Hyattidina, Monticulipora, Orbicula, Orbiculoidea, Orbignyella, Orthidium, Orthis, Orthoceras, Tubipora.
laminata (um)—Callopora, Cœnites, Fistulipora, Limaria, Lioclema, Milleria, Nicholsonella.
lamottensis (e)—Agraulos, Sao, Stromatocerium.
lanceolatus (a)—Mesopalæaster, Nereites, Nereograptus, Ptilodictya, Ptilodictya americana.
lanii—Pterinea.
lanosus (um)—Trichophycus.
laphami—Bronteus, Eotomaria, Goldius, Murchisonia, Orthoceras, Pleurotomaria, Turritoma.
lapicida—Raphistoma.
lapilla—Wingia.
lapworthi—Bryograptus.
laqueatus (a, um)—Cladopora, Conchidium, Conularia, Kionoceras, Orthoceras, Pentamerus.
lara—Athyris, Atrypa, Whitfieldella.
larrabeei—Pterygometopus.
larvata—Helicotoma, Liospira, Strophomena.
latasulcata—Hebertella.
lateralis (e)—Cyrtoceras, Syntrophia, Triplesia.
latiannulatum—Orthoceras.
latiaxiatus—Illænus.
latibrachiatus—Cupulocrinus, Dendrocrinus.
laticaulis—Climacograptus caudatus.
laticinctus (a)—Omospira, Ormospira, Scalites.
laticorrugata—Atrypa.
laticosta—Orthis, Platystrophia, Platystrophia biforata, Platystrophia lynx.
laticostata (um)—Opisthoptera, Orthis, Orthis (Platystrophia) biforata, Rhynchonella inæquivalvis, Rhynchotrema inæquivalvis.
laticurvatum—Cyrtoceras.
latidorsata—Illænus.
latifasciata—Murchisonia.
latifolius—Sphenothallus.
latifrons—Dolichopterus.
latimarginatus (a)—Asaphus, Eurychilina, Isochilina grandis, Primitia, Proetus.
latior—Diplograptus, Plectorthis equivalvis.
latiplicata—Parastrophia.
latiscula—Petraia.
latisculptilis—Brachyprion, Stropheodonta.
latisinus—Zaphrentis.
latispiralis—Helicopora.
latissimus—Ogygies.
lativentrum—Cameroceras, Endoceras, Ooceras.
lativia—Primitia.
latonummulatum—Actinoceras.
latus (a, um)—Agnostus, Beyrichia, Bollia, Ctenodonta, Cyclonema bilix, Cypricardites, Dicranopora, Isotelus, Leptoplastus, Modiolopsis, Orthoceras Actinoceras), Palæarca, Parabolina heres, Protichnites, Rafinesquina, Rhinidictya, Strophómena, Tellinomya, Trochonema umbilicatum.

latusculum—Petraia, Streptelasma.

laurentina—Billingsella, Orthis, Pleurotomaria, Raphistoma.

lavinia—Holopea.

laxatus (a)—Amplexus, Bythotrypa, Favistella, Fistulipora, Pterinea, Schuchertia.

laxiplicatus (a)—Strophonella.

laxus (a, um)—Acanthonema, Buthograptus, Diplograptus, Heterocrinus, Homocrinus, Ohiocrinus, Spirorbis.

lecythium—Astylomanon cratera.

leda—Brachyprion, Loxonema, Rafinesquina, Stropheodonta, Strophomena.

legoensis—Conchidium.

leidyi—Amphicœlia, Leptodomus.

leightoni—Camarotœchia, Modiolopsis.

leiosoma—Holopea.

leiosomellum—Raphistoma.

lemontensis—Habrocrinus.

lenior—Cymatonota.

lens—Atrypa, Callopora, Fistulipora, Lingula, Lingulella, Monticulipora, Obolus, Stricklandinia.

lenticularis (e)—Anomites, Camarella, Eoorthis, Orthis, Orusia, Parastrophia, Pleurotomaria, Prasopora, Raphistoma, Rhipidomella, Trochus.

lentiformis—Atrypa.

lentus (m)—Bryograptus, Orthoceras, Tetragraptus (Etagraptus).

leperditioides—Primitia, Primitia logani.

lepida—Rhynchotreta, Tellinomya (Nucula).

lepidodendroides—Orthoceras.

lepis—Leptobolus, Lingulella.

leptænoidea—Orthis.

leptonota (um)—Avicula, Eunema, Gyronema.

leptorhachis—Proetus.

lesleyi—Monocraterion.

lesquereuxi—Buthotrepis, Bythotrephis.

lesueuri—Cycloceras.

leucothea—Cypricardites, Cyrtodonta.

levatus (a, um)—Ctenodonta, Leda, Nucula, Ophileta, Schizostoma, Straparollus, Tellinomya.

levigata—Strophomenes.

levis—Bathyurus.

levisensis—Acrothele.

lewistonense—Raphistoma.

libanus (a)—Batostoma, Cleiocrinus, Escharopora, Glyptocrinus, Homotrypa, Ptilodictya, Stenopora.

libertatis—Cryptozoon.

lichenoides—Cladopora, Stromatopora.

ligarius—Cyrtoceras.

lilliformis—Dimerocrinus, Rhodocrinus, Thysanocrinus.

limæformis—Avicula, Limoptera.

limatoidea—Euomphalus alatus.

limatula—Leperditia.

limatus (um)—Cyclonema (Holopea), Chætetes frondosus.

limbatus (a)—Bumastus, Ctenodonta, Primitia, Primitiella, Stylonurus, Vanuxemia.

limitaris (e) — Constellaria, Dianulites, Diplotrypa, Escharopora, Lingula, Stellipora, Streptelasma (Zaphrentis).

limitis—Olenus (Parabolinella).

limulurus—Asaphus, Dalmania, Dalmanities, Phacops.

linares—Homalonotus, Trimerus.

lindahli—Eucalyptocrinus.

lindenensis — Camarotœchia, Conchidium.

lindsleyi—Bellerophon, Bucania.

lindstroemii—Bythocypris.

linearis — Cladograpsus, Cladograptus, Cœlidium, Cœlocaulus, Cœnograptus (Pleurograptus), Dendrograpsus, Fucoides, Gomphoceras, Murchisonia, Nemagraptus exilis, Pleurograpsus, Pleurograptus.

lineatus (a, um)—Clathrodictyon cystosum, Crateripora, Cystiphyllum, Helopora, Lingula, Protichnites, Spatiopora.

lineolatum—Endoceras proteiforme, Orthoceras, Phragmoceras.

lineopora—Helopora.

lingualis—Remopleurides.

linguatus — Remopleurides, Remopleurides (Caphyra).

lingulatus (a)—Eusarcus, Lingula.

lingulifera—Lindstrœmia.

linneyi—Leperditia, Orthis, Orthorhynchula.

liquensis—Hemigyraspis, Ogygia.

liratus (a, um)—Bellerophon (Bucania), Clisiospira (Onchocheilus), Clisospira, Gyronema, Lophospira (Seelya), Murchisonia, Spirifer, Stricklandinia, Trochonema.

litchfieldensis — Camarotœchia, Rhynchonella.

litoralis—Modiolopsis.

litoreus (a)—Bathyurellus, Pleurotomaria.

littoni—Conchidium, Pentamerus.

lituiformis—Calaurops, Eccyliomphalus.

lobata—Ctenopyge, Dekayia ulrichi, Leptoplastus, Zittelella.

lockei—Schizambon.

lockportensis—Dimerocrinus, Fistulipora, Glyptaster (Eucrinus).

loculosum—Cyrtoceras.

logananus—Protichnites.

logani—Beyrichia, Cheirocrinus, Chirocrinus, Cœlocaulus, Ctenodonta, Dalmania, Dichograpsus, Dichograptus, Glyptocystis, Glyptocystites, Graptolites (Didymograptus), Graptolithus (Loganograptus), Graptolithus (Monoprion), Isoarca, Loganellus, Loganograptus, Maclurea, Maclurites, Murchisonia, Olenus, Primitia, Ptychoparia, Tellinomya.

lonensis—Hebertella, Orthis, Pleurotomaria.

longævis—Isotelus.

longibrachiatus—Palæaster.

longicaudatus—Diplograptus, Drepanopterus.

longiceps—Eusarcus.

longidactylus—Dendrocrinus.

longirostris (a)—Camarella.

longispinus (a)—Bathyurus, Callicrinus, Climacograptus bicornis.

longispira—Cœlocaulus, Murchisonia.

longissimus (m)—Endoceras, Orthoceras, Serpulites, Vaginoceras.

longiuscula—Ribeiria.

longula—Eurychilina, Pachydomella.

longus (a)—Conularia, Ctenodonta, Eurymyella shaleri, Halliella seminulum, Modiolopsis, Petalocrinus, Tellinomya.

loomisii—Nereites, Nereograpsus.

loperi—Obolus.

loricatus—Caryocrinites.

loricula—Orthis, Plæsiomys.

loringi—Phyllograptus.

lorrainensis—Ctenodonta.

louckiana—Leperditia, Leperditia canadensis, Leperditia fabulites.

louisvillensis—Alveolites, Cystiphyllum, Eridophyllum, Favosites, Michelinia, Stricklandinia.

lovelandensis—Spirorbis.

lowi—Actinodictyon, Boreaster, Rhynchospira.

loxias—Orthoceras.

loxorhytis—Rafinesquina alternata, Strophomena alternata.

lucasi—Prosserella, Reticularia.

lucillum—Cyrtoceras.

luculentus (a)—Cyrtodonta grandis, Cypricardites.

ludlowensis (e)—Orthoceras, Stromatopora.

lunatifera—Strepula, Tetradella.

lunatus (a)—Arabellites, Bronteus, Cœnites, Dalmanella, Goldius, Orthis, Stromatopora.

lunulata—Rhytimya, Sedgwickia.

luthei—Cyrtoceras.

lycoperdon—Chætetes, Favosites, Monticulipora, Prasopora, Stenopora.

lycopodites—Chætetes, Favosites.

lycus—Oncoceras, Orthoceras.

lyelli—Lingula.

lyncioides—Eoorthis (Orusia) lenticularis, Orthis lenticularis, Orusia lenticularis.

lynx—Delthyris, Orthis, Platystrophia, Platystrophia biforata, Spirifer biforata, Terebratula.

lyoni (i)—Actinoceras, Brachiospongia, Ormoceras.

lysander—Cyrtoceras.

macastyensis—Triarthrus becki.

maccombi—Lioclemella.

maccoyanus—Ceratiocaris.

maccoyi—Niobe.

macdonaldi—Tarphyceras.

macer (ra)—Bellerophon, Drepanella, Leperditiella, Leperditia, Maclurea crassa, Maclurites crassa, Oxydiscus, Stropheodonta, Strophomena, Tetranota.

machæriformis—Nucula, Tellinomya.

macleodi—Dalmanella, Orthis.

maclurii—Euomphalus.

macrior—Orthis.

macrocheirus—Dolichopterus.

macrodictyum—Desmograptus.

macrolineatus (a)—Euomphalus, Poleumita.

macropetalus—Lecanocrinus.

macrophthalmus (a)—Calymene, Pterygotus.

macrophora—Cladopora.

macropleurus—Spirifer.

macropora—Nematopora, Trematopora (Trachypora).

macrops—Nileus.

macrospira—Cœlidium, Cœlocaulus, Murchisonia.
macrostoma (um)—Cyrtoceras, Monilopora.
macrostylus (a)—Heliolites, Labechia.
macrotheca—Leptograptus.
mactræformis—Ctenodonta, Nucula.
maculata—Atactopora, Dekayia, Escharopora, Fistulipora neglecta, Leptotrypa, Lichenalia concentrica, Monticulipora, Paleschara, Ptilodictya, Spatiopora.
maculosa—Amplexopora, Crepicephalus (Loganellus), Ptychoparia, Spatiopora, Strotospongia.
madisonensis (e)—Ctenodonta, Cyrtocerina, Dystactospongia, Entomis, Holocystites, Trochonema, Tryblidium.
madisonianus—Illænus.
maera—Lingulella, Lingulepis, Obolus.
magister—Cyrtoceras, Endoceras.
magnaplicata—Cyrtina.
magnicardinalis—Rhipidomella.
magnificus (a)—Anthaspidella, Aspidoceras, Cleiocrinus, Climacograptus typicalis, Conularia, Cupellæcrinites, Cupellæcrinus, Dicellocephalus, Dikelocephalus, Dinobolus, Gaurocrinus, Gyroceras, Hungaia, Lituites, Marsipocrinus, Obolellina, Palæaster, Promopalæaster, Ptilodictya, Remopleurides, Reteocrinus, Scenella.
magnipora—Pachydictya.
magnisulcatum—Kionoceras, Orthoceras.
magniventra (um)—Endoceras, Holopea.
magnopora—Batostoma, Callopora, Hallopora, Orbignyella.
magnus (a, um)—Actinoceras richardsoni, Cyclocystoides, Cyrtolites, Dekayia, Eucalyptocrinus, Heliophrentis alternatum, Hughmilleria, Loxonema, Maclurea, Maclurites, Monotrypa, Oncoceras, Oxydiscus, Phænopora, Protaræa, Protoscolex, Stictopora, Straparollus.
maia—Modiolopsis.
major—Camarotœchia, Cleidophorus, Cystiphorolites, Dalmanella electra, Eunicites, Favosites cristatus, Gazacrinus, Hormotoma, Lyrodesma, Murchisonia, Œnonites, Orthis electra, Petalocrinus, Sphærocoryphe, Stictopora mutabilis, Thecia, Vesicularia.
malvernius—Conocephalus.
mamillatus (a)—Calymene, Calymmene, Strombodes.
mammata—Primitia.
mammiferum—Leptopoterion.
mammillanum—Dystactophycus.
ma(m)millaris (e)—Arachnophyllum, Astrea, Columnaria, Receptaculites, Strombodes.
mammillata—Stromatopora.
mammillosa—Monticulipora.
mammulatus (a)—Anthaspidella, Chætetes, Heterotrypa, Monticulipora, Stenopora.
manitobensis (e)—Batostoma, Cyrtoceras, Eurychilina, Maclurea, Maclurina.
manlius—Lepocrinites.
manli(us)ensis—Klœdenia.
manitouensis—Schizambon.
manitoulinensis—Rosenella.
manitoulini—Villatotheca.
manniensis—Platymerella, Rhychotrema, Rhynchotrema capax.
mansonii—Atrypa, Rhynchonella.
mantelli—Lingula.
manticula—Lingula, Lingulella.
maquoketa—Pentamerus oblongus.
maquoketensis—Sphærocoryphe.
marcidus—Cryptograptus, Diplograptus, Graptolithus.
marcouanus—Megistocrinus, Periechocrinus, Saccorinus.
marcoui—Cameroceras, Endoceras, Succoceras, Zaphrentis.
marcyæ—Gomphoceras.
margaritoides—Pleurotomaria.
marginalis—Asaphus, Atrypa, Basilicus, Clionychia, Cyrtoceras, Terebratula.
marginatus (a)—Archæocrinus, Bathyurellus, Beyrichia, Ceraurinus, Dicranella, Glyptocrinus, Helicotoma, Leperditia, Lingula, Placentula.
maria—Athyris, Eurypterus, Hebertella, Meristina, Meristella, Orthis, Whitfieldia.
maritimum—Cystiphyllum.
markoei—Cyrtoceras.
mariana—Parabolinopsis.
maro—Orthoceras, Spyroceras.
mars—Cheirurus, Nieszkowskia.
marshi (i)—Discoceras, Lituites.
marylandica (um)—Ceratopora, Cyathophyllum, Fistuliporella, Schuchertella.
massiense—Cyrtoceras.

matacensis—Megalaspis.
matheri—Ptychoparia.
matinalis—Lingulella, Lingulepis, Obolus.
matthewsoni—Trematospira.
matutinus (a, um)—Actinostroma, Asterias, Cœlaster, Cyphaspis, Hudsonaster, Maclurea, Maclurites, Palæaster, Straparollus.
mawii—Pontocypris.
maximus (a)—Ambonychia, Asaphus, Calamopora, Favosites, Haplocrinites, Haplocrinus, Isotelus.
maynardi—Fistuliporella.
maysvillensis—Batostoma, Strophomena.
mccharlesii—Trochoceras.
mcchesneyanus—Clidophorus.
mcconnelli—Hemigyraspis.
mccoyi—Barrandia, Cyrtoceras, Dolichometopus, Niobe.
meafordensis—Tæniaster.
meandrina—Catenipora, Halysites.
meconideus—Caryocrinites.
media—Dalmanella elegantula, Orthis, Rhipidomella, Vanuxemia.
medialis—Corynotrypa, Ctenodonta, Cyclonema, Lophospira, Murchisonia, Primitia.
mediocardinalis—Cycloconcha.
mediocris — Cyclonema, Goniophora, Holopea.
medon—Orthoceras.
medullare—Kionoceras, Orthoceras, Protokionoceras
meedsi—Dinorthis, Orthis.
meekanus—Ceraurus, Eccoptochile.
meeki—Actinocrinus, Bythopora, Calymene, Chætetes, Dalmanella, Dalmanella testudinaria, Dicranopora, Endymion, Endymionia, Helopora, Homotrypella, Macrostylocrinus, Monticulipora, Orthis, Orthoceras.
megalops — Conokephalina, Dicellocephalus, Dikellocephalus, Eurypterus, Isotelus.
megalopthalmus—Asaphus.
megambonus(a)—Cypricardites, Whitella.
megastomus (a)—Heliolites.
megistos (us)—Asaphus, Isotelus.
melaniaformis—Hormotoma, Murchisonia.
melissa—Lyriocrinus, Metoptoma, Rhodocrinus, Stricklandinia.
melita—Leptæna
melocactus—Boliviana.
membranacea (um)—Berenicea, Platyceras, Sagenella.
menapiæ—Orthis.
menelaus—Orthoceras.
menis—Cladopora.
meniscus—Astræospongia, Blumenbachium, Lecanocrinus.
mensurans—Dicellograptus.
mercerensis—Glyptocrinus, Pleurocystis, Pleurocystites.
mercurius—Ceraurus (Cyrtometopus), Cheirurus, Cyrtocerina, Pseudosphærexochus.
meridionale—Spyroceras.
merops—Orthis, Scenidium.
mesicosta—Leptæna, Rafinesquina.
mesistria—Rafinesquina mesicosta.
meta—Cyrtia, Dalmania, Pterygometopus, Spirifer.
metellus—Cyrtoceras, Mælonoceras.
metissicus (a, um)—Chondrites, Hyalostelia, Pyritonema.
meyeri—Modiolopsis.
miamiensis—Alepidaster, Anorthaster, Compsocrinus, Cuneamya, Glyptocrinus, Palæaster, Protaster.
mica—Rhynchonella, Zygospira.
michelini—Catenipora, Cyathophyllum.
michiganense—Meristospira, Stromatocerium.
michleranus—Eccyliopterus, Euomphalus.
mickleboroughi — Orthodesma, Rhytimya.
microbasilis—Archæocrinus, Rhodocrinus, Thysanocrinus.
microfundulus—Syringopora.
microlathrata (um)—Gyronema, Holopea.
micronema—Bucania.
micronematodes—Calyptograpsus, Calyptograptus.
microphthalmus—Eurypterus.
micropleurus—Asaphus.
micropora—Chilotrypa, Halysites catenularia, Halysites catenulatus, Heliolites.
microps—Calymene, Pterygometopus.
microscopium—Cyrtoceras.
microstigma—Heterotrypa.
micula—Liospira, Pleurotomaria, Primitia, Raphistoma, Siphonotreta.

milesi — Clonograptus, Dichograpsus, Dichograptus, Graptolithus, Graptolithus (Monoprion).

milfordensis—Callopora, Ceramoporella granulosa, Monticulipora (Fistulipora).

militaris—Orthis flabellites.

millepunctatus (a)—Aparchites, Leperditia, Trematis.

milleranus—Ceraurus.

milleri—Anodontopsis, Bumastus, Cycloconcha, Diplotrypa, Hudsonaster, Illænus, Loxoceras, Mesotrypa, Modiolopsis, Modiolopsis (Colpomya), Murchisonia, Orthoceras, Orthodontiscus, Peronopora, Primitia.

milliganæ (i)—Caryocrinites, Caryocrinus, Dimerocrinus, Eucalyptocrinus, Gazacrinus, Glyptaster, Pisocrinus, Thysanocrinus.

millionensis—Strophomena.

minganensis (a)—Amphilichas, Archæocyathus, Archæoscyphia, Barrandeoceras, Bathyurus, Ethmophyllum, Lichas, Orthoceras, Petraia, Platymetopus.

minima (um)—Amplexopora septosa, Carinaropsis, Chonetes, Columnaria alveolata, Ctenodonta, Cyclostomiceras, Dystactospongia, Fistuliporella, Gomphoceras, Leptotrypa, Lingula, Maclurea, Maclurites, Nucula, Orthodesma, Protorthis, Psiloconcha, Rhinidictya, Straparollina, Streptelasma, Stromatocerium canadense, Tellinomya, Zygospira.

minna—Orthis.

minneapolis—Cyrtoceras, Cyrtorizoceras, Orthis, Productella.

minnesotensis (e)—Arenicolites, Batostoma, Berenicea, Bucania, Conchopeltis, Cryptozoon, Cylindrocœlia, Cypricardites, Eoharpes, Euomphalus, Harpina, Homotrypa, Illænus (Nileus), Leptæna, Lingula, Lophospira augustina, Oncoceras, Orthis, Orthoceras, Orthodesma, Plectambonites, Proboscina, Psiloconcha, Rafinesquina, Raphistoma, Rhynchonella, Rhynchotrema, Scolithus, Siphonotreta, Straparollus, Strophomena.

minor (us)—Bathyurellus, Ceramoporella granulosa, Conchicolites, Cornulites, Cyclocystoides, Cyclonema, Cylindrocœlia, Cyrtolites ornatus, Cystiphorolites, Dystactospongia, Eridotrypa ædilis, Eridotrypa mutabilis, Eurymyella shaleri, Gazacrinus, Lichenaria, Licrophycus, Lingulella, Lingulella starri, Ortonia, Pholidops trentonensis, Spirifer (Delthyris) vanuxemi, Stictopora mutabilis, Stomatopora, Streptorhynchus, Strophomena, Tetradium, Tetradium fibratum, Tetranota bidorsata, Thecia, Trimerella, Vesicularia.

minor (us)—continued.

minora—Labechia.

minuens—Huronia.

minusculus—Trocholites.

minutissimus (a, um)—Aparchites, Calamopora, Euomphalus, Leperditia, Leperditia (Isochilina), Microceras, Pelagiella, Platyceras, Primitia.

minutula—Crania, Schizotreta.

minutus (a, um)—Calamopora, Callograptus, Clathrodictyon vesiculosum, Chaetetes, Coleoprion, Conocephalites, Creseis, Cyclora, Cyrtodonta, Discolites, Ectomaria, Eugyrichnites, Holopea, Lingulella, Lingulepis, Linnarssonella, Murchisonia, Nematopora, Nucula, Obolella, Peronosporites, Primitia, Ptychoparia, Scolithus, Solenospira, Solenospira compacta, Stromatopora, Stromatoporella elora, Styliola, Tentaculites, Trematopora, Trematopora (Trachypora), Whitfieldella.

mirabilis (e)—Anaphragma, Caunopora, Petalocrinus.

mirus (a, um)—Capellina, Cryptonymus, Cybele, Cybeloides, Encrinurus, Gomphoceras, Pentameroceras, Sphærexochus.

miseneri—Anoptera, Ceraurus, Cypricardites, Ischyrodonta.

miser (a)—Bellerophon, Helicotoma, Pleurotomaria.

missisquoi—Cyrtoceras, Dikelocephalus, Ectomaria, Murchisonia, Pleurotomaria, Solenospira.

mississippiensis—Climacograptus.

missouriensis — Orthis, Schuchertella, Schuchertella convexa, Stribalocystis.

mitellum—Heliophyllum.

modestoides—Prosserella, Reticularia.

modestus (a, um)—Atrypa, Climacograptus, Cypricardites, Dalmanella, Dendrocrinus, Lingula, Liospira, Lophospira, Murchisonia, Orthoceras, Raphistomina, Reticularia, Rhinidictya min-

modestus—continued.
ima, Rhynchonella, Saffordia, Spirifer, Spirifer (Delthyris), Strophomena, Stylonurus, Tryblidium.
modiolaris—Cypricardia, Cypricardites, Modiolopsis, Pterinea.
modioliformis—Actinomya, Modiolopsis, Ischyrodonta, Whiteavesia.
mohawkensis—Murchisonia, Pleurotomaria.
mohri—Bellerophon, Orthoceras.
molesta—Monticulipora, Monticulipora (Peronopora), Monticulipora mammulata.
mollisonensis—Obolus.
moniliferum—Stromatocerium.
moniliformis (e)—Actinocrinites, Actinocrinus, Loxoceras, Ormathichnus, Ormoceras, Orthoceras, Periechocrinus.
monodon—Dawsonia.
mononema—Protospongia.
monroensis—Klœdenia, Pterygotus.
monroicum—Conocardium.
montaguensis—Klœdenia.
montanensis—Clarkella, Polytœchia.
montifera—Eurydictya, Homotrypa minnesotensis, Labechia, Spatiopora, Stromatocerium.
montrealensis (e)—Cyclonema, Endoceras, Metoptoma, Orthoceras, Scenella, Trematis, Vanuxemia.
montuosum—Batostoma.
moodeyi—Beyrichia.
moorei—Holasaphus, Lepadocrinus, Lepadocystis, Meekocystis, Schizolopha.
moosensis—Linguelella.
mopsus—Euomphalus, Straparollus.
morgani—Leperditia.
moritura—Platystrophia, Platystrophia lynx.
morrisi—Asaphus.
morrowensis—Bellerophon, Orthis, Platystrophia, Protowarthia.
morsei (ii)—Lingula, Lingulepis.
morsensis—Lingulepis.
mortoni—Spirula.
mosia—Lingula, Lingulella.
mucronatus (a)—Diplograpsus, Diplograptus, Graptolithus, Helopora, Lasiograptus, Rafinesquina.
multibrachiatus—Clematograptus.
multicameratus (a, um)—Cyrtoceras, Orthoceras, Tarphyceras.
multicaulis (e)—Diphyphyllum, Syringopora.
multicostatus (a, um)—Calymmene, Conchidium, Discoceras, Lituites, Pentamerus, Trocholites.
multicostus (a, um)—Calymene, Clitambonites, Syntrophia.
multifasciatus—Amphigraptus, Clematograptus, Graptolithus, Graptolithus (Monoprion), Sphærocystis, Sphærocystites
multifasciculatus—Graptolithus.
multifida—Eschara, Phænopora, Strictopora.
multiformis—Thamnograptus
multigranosa—Atactopora, Atactoporella.
multigruma—Lophospria, Murchisonia.
multilamellosa—Streptoplasma.
multilineatum—Orthoceratites, Orthoceras, Platystoma niagarense.
multilirata—Stricklandinia.
multinotatus—Protichnites.
multipartitum—Petalichnus.
multiplicata (um)—Cyathophyllum, Cyclocœlia sordida, Encuclodema sordida, Parastrophia, Plectorthis sordida.
multiporata—Homotrypella
multiporus (a, um)—Callocystis, Cladopora, Dekayella praenuntia, Eurydictya, Favosites, Fistulipora, Glyptocystis, Glyptocystites, Lioclema, Phænopora.
multipuncta—Conularia.
multipunctata—Crania.
multiradiata—Columnaria.
multiramis—Ptilodictya.
multiramosus—Bryograptus.
multisecta—Dalmanella, Dalmanella testudinaria, Orthis, Orthis emacerata.
multisegmentatus—Amphion, Encrinurus.
multiseptarius—Ecculiomphalus, Eccyliomphalus.
multiseptum—Orthoceras.
multiseriata—Cladopora.
multispinosus (a)—Amplexopora, Dekayia, Stylonurus (Ctenopterus).
multispinus—Acanthograptus.
multistriata—Atrypa marginalis, Clitambonites, Rhynchotreta thebesensis.
multistrictum—Conocardium.
multitabulata (um)—Callopora, Endoceras, Hallopora, Monotrypella, Vaginoceras.
multituberculata—Monticulipora.

multivolvatum—Raphistoma.

multivolvis—Hormotoma, Hormotoma gracilis, Murchisonia.

mumiaeforme—Clinoceras, Oncoceras.

mundulus (a, um)—Aparchites, Atactopora, Atactoporella, Cyclocystoides, Homotrypella, Leperditella, Leperditia, Liospira, Primitia, Seelya, Stropheodonta, Mitoclema.

mundum—Orthodesma, Rhytimya.

munsteri (i)—Lingula.

muralis—Eucalyptocrinus, Pleurotomaria.

murchisoni—Asaphus, Didymograpsus, Heliolites, Lituites, Malocystites, Myrianites, Staurocephalus.

muricata—Helicotoma, Helicotoma planulata.

murryana—Loxonema.

murrayi—Dictyonema, Lingula, Jovellania, Obolus, Orthoceras.

musculosa—Isochilina.

muta—Primitia.

mutabilis—Eridotrypa, Meganteris, Rensselæria, Rhinidictya, Stictopora.

mutata—Platystrophia colbiensis.

mycale—Orthis.

mylitta—Lophospira, Murchisonia.

myops—Eurypterus, Stylonurus.

myrice—Cyrtoceras, Cyrtia, Cyrtia exporrecta.

mytiliformis—Myalina, Mytilarca.

mytiloides—Ambonychia, Cleionychia, Modiolopsis.

nævigera—Dekayella.

nais—Modiolopsis.

nanus (a, um)—Bucanella, Bucania, Callopora, Cypricardites, Dicellomus, Didymograptus, Didymograptus caduceus, Didymograptus indentus, Holopea, Holopea (Cyclora), Leperditia, Leperditia canadensis, Modiolopsis, Obolella, Ophileta complanata, Spirifer (Delthyris), Stigmatella, Subulites, Trochonema, Vanuxemia.

naresii—Helicotoma.

narrawayi—Ceratocephala, Hudsonaster, Protopalæaster.

nashvillae—Eucalyptocrinites, Eucalyptocrinus.

nashvillensis—Bellerophon, Bucania, Bythopora, Cyrtoceras, Holopea, Rhinidictya.

nasoni—Pleurotomaria, Raphistoma.

nasutus (a, um)—Calymene, Calymenella, Ctenodonta, Cypricardites, Dicranopeltis, Levisia, Lyonsia, Moniolopsis, Orthodesma, Pterygotus (Eusarcus), Rafinesquina alternata, Strophomena, Strophomena alternata, Tellinomya.

natator—Barrandeoceras, Nautilus, Phragmoceras.

naticoides—Platyceras.

nattressi—Idiostroma.

nautarum—Bellerophon.

naviformis—Athyris, Atrypa, Meristella, Whitfieldella, Whitfieldia.

navigiolum—Dendrocrinus.

nealli—Gaurocrinus, Glyptocrinus, Reteocrinus.

nearpassi—Beyrichia, Klœdenia, Stropheodonta, Strophodonta.

necis—Megistocrinus, Periechocrinus, Saccocrinus.

neenah—Dictyonema, Rhynchonella, Rhynchotrema.

neglectus (a)—Ambonychia, Amphicœlia, Aparchites granilabiatus, Atrypa, Camarotœchia, Camarotœchia (Stegerhynchus), Clidophorus, Cœlocaulus, Cuneamya, Dianulites, Diplotrypa, Fistulipora, Fistulipora maculata, Grammysia, Leptodomus, Monticulipora hospitalis, Nuculites, Orthis, Plectorthis, Pterinea, Rhinidictya, Rhynchonella, Rhynchonella (Stegerhynchus), Rhynchonella (Stenoschisma), Sedgwickia, Streptorhynchus, Strophomena, Tentaculites.

neleus—Cyrtoceras, Mælonoceras.

nemea—Strophomena.

neptuni—Actinodictyon, Receptaculites.

nereis—Holopea.

nerepisense—Ctenopleuron.

nereus—Arctinurus, Encrinurus, Lichas.

nerine—Ophileta.

nero—Bathyurus, Petigurus.

nerus—Cryptonymus.

nervata—Fenestella, Pterinea, Ptiloporella.

nestor—Gomphoceras, Phragmoceras.

nettelrothi—Conchidium, Orthis.

nevadaensis—Amphion, Pliomera, Pliomerops.

newberryi—Acanthonema, Ascoceras, Aspidopora, Chætetes, Monomorella, Monticulipora, Orthonema, Prasopora.

newlini—Buthotrephis, Carcinosoma, Eurysoma, Eusarcus.

newportensis—Atactoporella, Monticulipora.

newsomensis—Atrypa reticularis, Hyolithes, Orthostrophia, Pterinea, Rhipidomella, Strophodonta (Brachyprion).

newtonensis—Calvinella, Dikelocephalus, Eoorthis, Orthis, Ptychoparia.

newtonwinchelli—Clarkoceras, Piloceras.

nexilis—Alecto.

nexus—Halysites, Halysites catenulatus.

niagarensis (e)—Acroculia, Actinostroma whiteavesii, Alveolites, Ampyx, Atrypa reticularis, Blothrophyllum, Bronteus, Bumastus, Bythocypris punctulata, Callograptus, Calymene, Calymene blumenbachii, Calymmene, Ceramopora, Ceraurus, Cheirurus, Chonophyllum, Conocardium, Conophyllum, Conularia, Corymbocrinus, Crotalocephalus, Cystiphyllum, Delthyris, Diaphorostoma, Drymotrypa, Favosites, Goldius, Holopea, Illænus, Lituites, Michelinia, Orthoceras, Orthoceras (Geisonoceras), Palæaster, Pholidostrophia, Platyceras, Platyostoma, Platystoma, Pseudohornera, Quenstedtia, Raphistoma, Romingeria, Spirifer (Eospirifer), Staurocephalites, Straparollus, Stropheodonta (Brachyprion), Strophomena, Strophostylus, Tentaculites, Thamniscus, Theca, Triplecia, Vermipora.

nicholsoni—Ceramopora, Chiloporella, Dicranograptus, Didymograptus, Monticulipora (Fistulipora), Rhinidictya, Sphærolithes.

nicklesi—Hebertella (Eridorthis), Homotrypa, Plectorthis (Eridorthis), Stigmatella.

nicollet(t)i—Cycloceras, Hallina, Orthoceras, Zygospira.

nilesi—Edmondia, Modiolopsis.

nilssoni—Graptolites.

niobe—Metoptoma, Triblidium.

niota—Cypricardites, Pleurotomaria, Trochonema, Vanuxemia.

nisis—Hebertella (Schizonema), Hebertella (Schizoramma), Orthostrophia (Schizoramma), Orthis.

nitens—Leptæna, Orthis, Rafinesquina, Strophomena.

nitidulus (a)—Aristerella, Cyrtolites, Cyrtolitina, Dicranopora, Ptilodictya, Rhinidictya.

nitidus (a, um)—Ambonychia, Athyris, Atrypa, Bathyurellus, Cleionychia, Clionychia, Ctenodonta, Cyclocystoides, Didymograpsus, Didymograptus, Drepanella, Drepanella nitida, Eunema, Graptodictya, Graptolithus, Graptolithus (Monoprion), Halysites catenularia, Homotrypa, Hormotoma salteri, Lecanocrinus, Lioclemella, Maclurea, Maclurites, Merista, Meristella, Meristina, Mytilarca, Primitia, Tellinomya, Trematopora, Trochonema, Whitfieldella.

nobilis (e)—Fusispira, Glyptocrinus, Pentamerus, Poterioceras, Siphonocrinus, Spirifer (Eospirifer).

nobilissimus—Melocrinus.

nodobrachiatus—Dendrocrinus.

nodocostatum—Orthoceras, Skenidium.

nodocostum—Orthoceras.

nodostriatus (a)—Asaphus, Atrypa.

nodosus (a)—Cornulites, Echinocystites, Escharopora recta, Helopora, Homotrypella, Lysocystites, Monotrypa, Prasopora, Primitia, Ptilodictya, Schizocrinus, Scyphocrinus, Ulrichia.

nodulata—Ceratocephala.

nodulifera—Beatricea.

nodulosus (a)—Beatricea, Callopora, Calloporella, Chætetes, Eridotrypa, Eucalyptocrinus, Hallopora, Homotrypa, Monticulipora, Monticulipora (Heterotrypa), Pleurotomaria.

normaliana—Cyclonema.

normalis—Ampyx, Ampyx (Lonchodomus).

normanensis—Cyrtodonta.

normani—Pleurotomaria.

normanskillensis—Pterygotus.

norvegica (um)—Dictyonema, Dictyonema flabelliforme.

norwoodi—Cyrtoceras, Homotrypella, Lingulops, Stricklandina.

notabilis (e)—Lophospira, Opisthoptera, Trochonema.

notans—Asaphus, Brachyaspis.

notatus (a)—Beyrichia, Cyrtospira, Klœdenia, Subulites.

notchensis—Obolus (Westonia).

nothus—Ceramopora (Paleschara).

notum—Trochoceras.

novacarlislensis (e)—Cycloceras, Orthoceras.

novascoticus—Chonetes.

novascotius (a)—Chonetes, Discina.

noveboracensis—Temnograptus.

noveboracum—Monomorella, Nanno.

novellus — Chaunograptus, Dendrograptus.

novicia—Ctenodonta, Tellinomya.

nucella—Heliolites subutubulata.

nucleiformis—Ctenodonta, Tellinomya.

nucleolatus (a)—Atrypa, Merista, Meristella, Pleurotomaria, Rhynchonella, Uncinulus, Whitfieldella.

nucleus—Atrypa, Botryocrinus, Camarella, Cyathocrinus, Dendrocrinus, Gypidula, Homocrinus, Pentamerus, Sieberella, Triplecia.

nucula—Rhynchonella, Terebratula.

nuculiformis—Clidophorus, Ctenodonta, Lyonsia, Modiolopsis, Tellinomya.

nuculitiformis—Ribeira.

numeria—Liospira, Pleurotomaria.

numerosus—Trachomatichnus.

numitor — Ceraurus, Cheirurus, Nieszkowskia.

nummiformis — Callopora, Calloporella, Mesotrypa.

nummularium—Orthoceras.

numulatum—Actinoceras lata, Orthoceras (Actinoceras) lata.

numulus—Orbiculoidea.

nundina—Syntrophia.

nuperus—Ceraurus, Cheirurus.

nutans—Streptorhynchus, Strophomena, Stropomena (Hemipronites).

nutrix—Camarotœchia, Rhynchonella.

nuxmoschata—Astylospongia præmorsa, Caryospongia juglans.

nycteis—Metoptoma, Triblidium, Tryblidium.

nympha—Eoorthis desmopleura, Lingula, Orthis (Plectorthis) desmopleura.

nymphale—Cyathophyllum.

nysius—Conchidium, Pentamerus.

obconicus—Comarocystites, Comarocystites shumardi, Eucalyptocrinus, Euspirocrinus, Macrostylocrinus, Mariacrinus, Melocrinus, Stephanocrinus, Streptosolen.

obelisca—Hormotoma, Murchisonia, Murchisonia (Fusispira).

oberon—Orthoceras.

obesus (a, um)—Byssonychia, Cyrtodonta, Eurychilina, Fusispira, Gomphoceras, Holopea, Olenus scarabæoides, Pachydictya, Poterioceras, Protowarthia, Sinuites, Sinuopea, Subulites.

oblata—Atrypa nitida, Lingula, Merista nitida, Orthis, Trematis, Whitfieldella, Whitfieldella nitida.

obliquata—Cardiomorpha, Ceromyopsis, Ptilotrypa, Whitella.

obliquior—Streptelasma.

obliquis—Diplograpsus.

obliquus (a)—Anthaspidella, Arabellites, Conradella, Ctenobolbina, Ctenodonta, Cypricardites, Cyrtodonta, Eurychilina Favosites, Holopea, Homotrypa, Haronia, Lophospira, Mytilarca, Nucula, Opisthoptera, Palæoconcha, Phragmolites, Ptilodictya, Rhinidictya, Scævogyra, Stictopora, Streptelasma, Tellinomya, Tentaculites, Turbo, Zaphrentis.

oblongus (a)—Actinomya, Aparchites, Bathyurus, Caryocaris, Cuneamya, Cycloconcha, Lingula, Lloydia, Melocrinus, Modiolopsis, Pentamerus, Pternitella, Whiteavesia.

obovatum—Dictyonema.

obpyramidalis — Actinocrinus, Melocrinus, Stephanocrinus.

obpyriformis—Favosites, Odontocaulis.

obscurus (a, um)—Avicula, Clidophorus, Cyrtoceras, Dekayella, Dekayia, Holopea, Jonesella, Leperditella, Leperditia, Leptæna, Palæophycus, Parastrophia, Plectoceras, Porambonites, Pterinopecten, Rafinesquina, Strophomena, Turbo.

obsoletus (a, um)—Acanthonema holopiformis, Acidaspis, Bucania, Conchidium, Cyclonema, Cypricardia, Cypricardites, Eotomaria, Eunema, Euomphalopterusalatus, Holopea, Lophospira (Seelya) lirata, Modiolopsis, Pleurotomaria, Pleurotomaria (Turritella), Protozyga, Sarcinula, Spirifer (Eospirifer) radiatus, Staurocephalus, Tetranota, Zygospira.

obstructum—Orthoceras.

obtusifrons—Cypricardites, Vanuxemia.

obtusiplicata—Atrypa, Camarotœchia, Rhynchonella.

obtusus (a)—Ambonychia, Asaphus, Bythocypris, Cœlocaulus, Conchopeltis (Metoptoma), Cypricardites, Cyrtodonta, Isotelus, Lingula, Liospira, Modiola, Modiolopsis, Murchisonia, Onchometopus, Orthis, Orthonychia, Palæarca, Posidonomya, Raphistoma, Scenella.

obvius (a)—Lichas, Lichas (Oncholichas).

occasus—Bronteus, Goldius.

occidens—Favosites, Modiolopsis, Oldhamia (Murchisonites), Phanerotrema, Pleurotomaria labrosa.

occidentalis (e)—Arctinurus, Clisospira, Conchidium, Dimerocrinus, Ectomaria pagoda, Eurystomites undatus, Favosites forbesi, Glyptaster, Hebertella, Holopea, Leptobolus, Lichas boltoni, Lituites undatus, Nautilus, Odontocaulis, Orthis, Orthodesma, Pachydictya, Pentamerus, Petraia pygmæa, Platystrophia, Plectoceras undatus, Pterinea, Receptaculites, Solenospira pagoda, Strophomena fluctuosa, Thysanocrinus.

oceanus (a)—Maclurea, Maclurites, Nautilus.

ocellatus—Girvanella, Strephochetus.

octobrachiatus — Dichograpsus, Dichograpsus, Graptolites (Didymograpsus), Graptolithus, Graptolithus (Loganograptus).

octocostatus—Spirifer (Delthyris).

octonarius—Dichograpsus, Dichograptus, Graptolithus, Graptolithus (Monoprion).

octonotatus—Protichnites.

oculata—Prasopora.

oculifera—Beyrichia, Ceratopsis, Eurychliina, Tetradella.

œhanus (a)—Heterocrinus, Heterocrinus (Iocrinus), Ohiocrinus, Rhytimya.

œhlerti—Cœlidium, Cœlocaulus, Murchisonia.

œilensis—Crisinella.

offleyensis—Zaphrentis.

offula—Leptotrypa, Paleschara, Petigopora.

ohioensis—Callopora, Ceramopora, Ceramoporella, Ctenodonta, Labechia, Lioclemella, Lophospria, Monticulipora, Pleurotomaria, Receptaculites, Spirifer (Delthyris), Trimerella, Trochonema pauper, Whitella, Zaphrentis.

oligoptychus—Spirifer, Spirifer (Eospirifer) niagarensis.

oligotheca—Climacograptus.

olorus—Cycloceras, Orthoceras.

ommanneyi—Endoceras, Orthoceras.

onealli—Acidaspis, Callopora, Callopora sigillaroides, Chætetes, Hallopora, Monticulipora, Monticulipora (Heterotrypa), Odontopleura, Reteocrinus.

oneidaense—Orthoceras.

ontario—Tetradium.

ontarioensis—Dendrograptus.

opertus—Bellerophon (Bucania).

ophelia—Holopea.

oppletum—Vaginoceras.

ops—Camarella, Parastrophia.

orbicauda—Illænus.

orbicaudatus—Bumastus, Illænus.

orbicularis—Ambonychia, Atrypa, Monomorella, Orthis, Posidonomya, Pterinea.

orbiculatus (a)—Avicula, Carinaropsis, Ceramopora, Ceramoporella, Helcion, Mesotrypa.

orbiculoides—Amphicœlia, Lyriopecten.

orbignyanus—Bathyurus.

orbipora—Stictopora, Stictotrypa.

orcas—Cyrtoceras, Oncoceras.

ordinaria—Schuchertia.

ordinata (um)—Cladopora, Orthoceras.

orestes—Acaste, Astreopora, Cyrtoceras, Madrepora, Phacopidella, Phacops.

organum—Sarcinula, Syringophyllum.

orientalis—Camarotœchia, Discina, Prasopora simulatrix, Rhynchonella.

orion—Agnostus.

orithyia—Metoptoma, Scenella.

ornatissimus—Holocystites.

ornatus (a, um)—Asaphocrinus, Cariocrinites, Caryocrinites, Caryocrinus, Chicagocrinus, Conocardium, Cryptonymus, Ctenocrinus, Cyrtolites, Encrinurus, Eopteria, Eucalyptocrinus, Glyptocrinus, Habrocrinus, Hercocrinus, Holocystites, Lecanocrinus, Leperditella, Leptotrypa, Macrostylocrinus, Periechocrinus, Porcellia, Protoscolex, Saccocrinus, Siderocrinites, Siderocrinus, Tentaculites, Trematopora, Trematopora primigenia.

orodes—Cyclostomiceras, Cyrtoceras.

orphyne—Metoptoma, Palæacmæa.

orthambonites—Orthis.

orthididea—Leptæna, Strophomena.

orthonotus (a, um)—Cypricardia, Endodesma, Modiolopsis, Unio.

ortoni—Acidaspis, Atactopora, Atactoporella, Chætetes, Dicraniscus, Discoceras, Gomphoceras, Lituites, Monomorella, Monticulipora, Monticulipora (Peronopora), Odontopleura, Orthoceras, Triplecia, Triplesia.

orus—Kionoceras, Orthoceras.

osborni—Palæophonus, Proscorpius, Pterygotus.

osculum—Cœloclema, Diamesopora, Trematopora.

osgoodensis—Codaster, Monotrypa, Stephanocrinus.

ostiolata—Cheilotrypa, Chilotrypa, Clathrodictyon, Clathrodictyum, Stromatopora, Trematopora.

oswegoensis—Anisocrinus, Dendrocrinus, Lecanocrinus, Tentaculites.

otisius—Dolichopterus, Pterygotus.

ottawa—Isochilina, Leperditia.

ottawaensis (a)—Astrocystites, Astroporites, Batostoma, Eccyliopterus, Eoharpes, Harpes, Harpes (Harpina), Hemiphragma, Licrophycus, Murchisonia (Hormotoma) augustina, Ophileta, Orthoceras, Petraia, Porambonites, Rhynchotrema, Steganoblastus, Trematis, Turrilepis.

ovalis (e)—Acrotreta, Arabellites, Carabocrinus, Crumenaecrinites, Cyathocrinus, Cypricardites, Eucalyptocrinites, Eucalyptocrinus, Haplocrinites, Haplocrinus, Holopea, Ischyrodonta, Nematopora, Orbiculoidea, Pentamerus, Pholidops, Schizotreta, Sphærocystites globularis, Tryblidium.

ovatipora—Stictopora.

ovatus (a, um)—Allonychia, Ctenodonta, Cycloconcha, Cypricardites, Eucalyptocrinus, Holocystites, Homotrypella, Leperditia, Lingula, Lingulops, Modiolopsis, Monomorella, Pholidops, Stromatotrypa, Tellinomya, Thaleops, Thaleops (Illænus), Thalamocrinus.

oviformis—Ctenodonta, Cypricardites, Cyrtodonta, Modiolodon, Modiolopsis.

ovoidea—Megambonia.

ovoides—Oncoceras, Trochonema, Whitfieldella.

owatonnensis—Camarella.

owenanus (a)—Eccyliopterus, Ophileta.

owenensis—Eccyliopterus.

oweni—Agraulos, Anomocarella, Arionellus, Cœloclema, Conaspis, Conocardium, Conocephalitis, Conocoryphe, Diamesopora, Dicellocephalus, Dikelocephalus, Fistulipora, Lophospira, Modiolopsis, Monticulipora (Fistulipora), Murchisonia, Ptychoparia, Raphistoma, Receptaculites, Tripteroceras, Triptoceras.

oxfordensis—Fenestella, Holopea.

ozarkensis—Calvinella, Murchisonia, Orthoceras.

pachycheirus—Eurypterus, Eurypterus lacustris.

pachydermatus—Proetus.

pagoda—Ectomaria, Eunema, Murchisonia, Solenospira.

palinurus—Bellerophon, Lituites, Oxydiscus, Schrœderoceras.

palmata—Buthotrephis, Syntrophia.

palmipes—Rauffella.

paludiniformis—Holopea.

panderi—Camarella, Remopleurides.

panderiana—Orthis.

pandion—Oncoceras.

pannosus (a, um)—Calathium, Conradella, Crania, Cyrtolites, Phragmolites.

panolensis—Isochilina.

papillatus (a, um)—Camptolithus, Chætetes, Conularia, Dermatostroma, Hyolithellus, Jaekelocystis, Labechia, Lyellia, Monticulipora, Protarea richmondensis, Stromatopora.

papilliformis—Schizotreta.

papillosus (a)—Eucalyptocrinus, Holocystites, Lingula, Lophospira, Murchisonia.

paquettiana—Solenopora,

parabola—Clelandia, Harrisia.

paradoxicus (a, um)—Calathium, Dendrocystis, Nipterella, Syringocrinus.

paradoxus—Entomolitus, Syringocrinus.

paraia—Anabaia.

parallela (um)—Beyrichia, Crania, Cymatonota, Dictyonema, Modiolopsis, Orthodesma, Orthonota, Primitia, Ptilodictya, Rhinidictya, Sphenolium, Syringopora, Syringostroma.

parasiticus (a, um)—Agelacrinus, Astrocerium, Favosites, Hemicystites, Idiotrypa, Monticulipora, Streptelasma.

parkensis—Hebertella maria.

parmula—Aspidopora fenestelliformis, Prasopora.

parmulata—Discina, Orbicula, Orbiculoidea.

parryi—Catenipora, Halysites.

parvangulus—Dicranograptus nicholsoni.

parvidens—Ctenodonta.

parvistellata—Anthaspidella.

parvituba—Lyellia.

parviusculus (a)—Hyolithes, Mesopalæaster, Modiolopsis, Palæaster, Proetus, Theca.

parvulipora — Eridotrypa, Fenestella, Heterotrypa.

parvulus (a, um)—Acidaspis, Anomocare, Aparchites, Astylospongia, Bythopora, Cyclora, Cyrtospira, Gomphoceras, Helopora, Holocystites, Holopea, Ilionia, Leperditia, Lichenalia concentrica, Odontopleura, Palæopteria, Pentamerus, Poleumita, Polytropis, Pterinea, Streptelasma, Streptoplasma, Subulites, Turbo.

parvus (a, um)—Archæocrinus, Calloporina, Camerella, Clematocrinus, Climacograptus, Columnaria, Constellaria, Cordylocrinus, Cuneamya, Cyclocystoides, Cyrtodonta, Cyrtolites, Dalmanella, Dalmanella elegantula, Dicranopora, Dinobolus, Glyptocrinus, Halloporina, Hindia, Hindia sphæroidalis, Holocystites, Homocrinus, Lampterocrinus, Loxonema, Melocrinus, Microspongia, Modiolopsis, Monticulipora, Murchisonia, Orthis, Orthis elegantula, Orthodesma, Phragmoceras, Platycrinus, Ptychocrinus, Raphistoma planistrium, Ribeiria, Rhynchotreta, Sphærexochus, Stomatopora, Straparollus, Stylaræa, Subulites.

pasithea—Cyathophyllum.

patei—Caryomanon, Pycnosaccus.

patella—Dianulites, Diplotrypa, Mesotrypa.

patelliformis—Archinacella, Carinaropsis, Helcion.

patens—Zaphrentis.

patenta—Leptæna, Strophomena, Strophonella, Streptorhynchus.

patera—Astylomanon cratera, Prasopora.

patersoni—Bellerophon.

pattersoni—Canistrocrinus, Glyptocrinus, Lichenocrinus, Reteocrinus.

patriciaense—Hormotoma.

patronus—Protophragmoceras.

patulus (a, um)—Achradocrinus, Chondrites (Bythotrephis), Chondrites (Trichochondrites), Didymograptus, Graptolithus, Modiolodon, Stenopora, Streptelasma, Tryblidium, Zaphrentis.

paucicostata—Eridonychia.

pauciplicata—Platystrophia, Platystrophia lynx, Trematospira camura.

paucivolvatum—Raphistoma.

paulianus—Corydocephalus wesenbergensis, Lichas, Lichas (Arges) wesenburgensis.

paululus—Eunicites.

pauper—Dicellocephalus, Dikelocephalus, Pleurotomaria, Ptychaspis, Trochonema (Cyclonema), Trochonema (Pleurotomaria), Dekayia, Heterotrypa, Klœdenella clarkei, Rhinidictya, Stictopora, Zygospira.

pauquettiana — Leperditia canadensis, Leperditia fabulites.

pavonia—Chætetes, Escharopora, Heterodictya, Monotrypa, Monticulipora, Nicholsonia, Peronopora, Ptilodictya.

peachii—Solenopora compacta, Tetradium.

pearyi—Receptaculites.

peccatonica—Helicotoma.

pecten—Ctenopyge, Olenus (Sphærophthalmus), Strophomena.

pectinatus—Arabellites.

pectinella—Dinorthis, Orthis.

pectunculoides—Ctenodonta, Tellinomya.

peculiaris (e)—Archæocrinus, Lioclema, Nicholsonella, Trimerocystis.

pediculata—Monotrypa, Rhinidictya.

pegramensis—Alveolites, Heliophyllum, Pachypora (Platyaxum), Reticularia.

pelagica (um)—Cyathophyllum, Straparollina.

pelias—Obolus (Lingulella) mcconnelli.

pelliculata—Dekayia, Monticulipora.

pelopea—Discina, Schizotreta.

pelops—Asaphus.

peltatum—Discophyllum.

peltifer—Climacograptus bicornis.

pembrokensis—Grammysia.

penicillus—Xenocrinus.

pennanti—Cyathophyllum.

pennatulus—Didymograpsus, Didymograptus, Graptolithus, Graptolithus (Monoprion).

pennsylvanicus (a)—Klœdenella, Klœdenia, Leperditia, Onchus.

pentagonalis—Cupellæcrinites, Cupellæcrinus, Marsipocrinus.

pentagonius—Porocrinus.

pentagonus (a, um)—Arachnophyllum, Glyptocrinus insperatus, Heterocrinus, Pterotheca, Siphonocrinus, Stenocrinus, Strombodes.

pentalobus—Codaster, Stephanocrinus.

pentangularis—Callicrinus, Dimerocrinus, Glyptaster, Thysanocrinus.

pentolena—Palæocystis.

peosta—Diplograptus, Graptolithus.

pepina—Billingsella, Orthis, Orthis (Orthisina).

pepinensis (e)—Euomphalus, Raphistoma.

peracuta (um)—Bucania, Ctenodonta, Lophospira, Murchisonia, Raphistoma.

perampla—Crepipora.

perangulata (um)—Ambonychia, Lophospira, Murchisonia bicincta, Orthoceras, Psilonychia.

perantiquus (a)—Enallopora, Chætetes, Gorgonia, Protocrisina.

perarmata—Acidaspis.

percarinata (um)—Crania, Cyclonema, Pleurotomaria.

percingulata (um)—Cyclonema.

percrassus—Dictyonema.

perdentatus—Eunicites, Lumbriconereites.

perdewi—Pseudocrinites.

perelegans—Graptodictya, Heliolites, Ptilodictya.

perexilis (e)—Dicellograptus sextans, Dictyonema.

perflexilis—Goniograptus.

perflexus—Didymograpsus.

perforator—Ceraurus (Nieszkowskia), Cheirurus, Nieszkowskia.

perforatus (a, um)—Diaphorostoma, Bellerophon (Bucania), Cliocrinus, Lophospira.

perfrondosa—Dekayia, Dekayella prolifica.

pergibbosus—Pentamerus.

pergracilis (e)—Buthotrephis, Dictyonema, Desmograptus, Subulites.

perinflata—Beyrichia, Klœdenia.

perkinsi—Bathyurus, Cryptozoon, Eccyliomphalus, Euomphalus, Nautilus, Nileus, Ooceras, Tarphyceras.

perlamellosa (um)—Lophospira, Murchisonia, Rhynchonella, Rhynchotrema.

perlatus (a)—Liospira, Modiolopsis, Pleurotomaria, Retiolites, Retiolites (Gladiograptus).

perlongus—Holocystites.

perminima—Primitia.

perminuta—Ctenodonta.

permultus—Trachomatichnus.

pernodosus—Encrinurus.

pernoides—Mytilarca, Streptomytilus.

perornata—Bucania.

perovalis—Archinacella, Metoptoma.

perovata—Glossina, Lingula, Palæoglossa.

perparvum—Orthoceras.

perplexus (a)—Diabolocrinus, Dionide, Lingula, Moorea.

perroti—Orthoceras.

perryi—Lingula.

perseus—Orthoceras.

persimilis—Amplexopora, Callopora pulchella, Cypricardites, Cyrtodonta, Hallopora pulchella, Leperditella, Leperditia, Liospira.

persiphonatum—Huronia, Orthoceras.

personata—Stigmatella.

perspicator—Bathyurus, Goniurus.

perstriata—Helicotoma.

persulcata—Beyrichia, Bollia.

pertenuis (e)—Cœnograptus, Dictyonema, Diplograptus amplexicaulis, Fenestella, Nemagraptus, Nemagraptus explanatus, Phacelopora, Rhopalonaria.

pertinax—Orthoceras.

perundosa—Holopea.

perungulatus—Corynoides gracilis.

pervagata—Plectorthis equivalvis.

pervetus (a)—Dalmanella, Dalmanella subæquata, Euomphalus, Inachus, Orthis, Pianodema subæquata.

pervetustus (a)—Cyclonema, Cyclostoma, Euconia, Euomphalus, Holopea, Holopea antiqua, Pleurotomaria, Straparollus.

pervoluta—Bucania, Tremanotus, Protowarthia, Sinuites.

pesovis—Pentamerus.

petalliformis—Plasmopora, Porites.

petasiformis—Amplexopora, Amplexopora welchi, Monotrypa, Monticulipora, Monticulipora welchi.

petechialis—Chætetes, Monticulipora, Petigopora.

petilus (a)—Cœlocaulus, Murchisonia, Reticularia bicostata, Spirifer bicostata.
petræ—Orthis.
petropolitanus (a)—Chætetes, Dianulites, Diplotrypa, Monticulipora, Stenopora.
pettiti—Oncoceras.
phædra—Cyclonema.
phainotheca—Dendrograptus.
phalera—Carinaropsis.
phaseolus—Cytherina, Leperditia.
phillipsi (i)—Archinacella, Eucalyptocrinites, Eucalyptocrinus, Metoptoma.
philomela—Lingula, Strophomena.
philomena—Stropheodonta (Brachyprion).
phlyctainoides—Arges, Calymene, Corydocephalus, Lichas.
phoca—Atrypa, Hindella, Lissatrypa, Rhynchonella.
pholadiformis—Actinomya, Modiolopsis, Pholadomorpha, Whiteavesia.
pholadis—Cymatonota, Orthonota, Pterinea.
phosphaticus—Sabellarites.
phragmoceras—Amplexus, Calophyllum.
phycoides—Inocaulis.
phyllophorus—Climacograptus.
pickthorni (i)—Cyathophyllum Strephodes.
pictoense—Orthoceras.
piger (ra)—Clitambonites, Orthis.
pileolum—Archinacella, Orthoceras, Triblidium.
pileus (m)—Agelacrinites, Agelacrinus, Agelacrinus (Lepidodiscus), Pycnopegma.
pilosum—Cyrtoceras.
pinnaformis—Lingula, Lingulepis.
piriformis—Syphonia.
pisa—Camarotœchia, Rhynchonella.
piscator—Orthoceras.
pisiformis—Agnostus, Arachnocrinus, Battus, Cyathocrinus, Entomolitus paradoxus, Entomostraceus, Lecanocrinus, Nucleospira, Poteriocrinus.
piso—Orthoceras.
pistilliformis—Zittelella typicalis.
pisum—Deiphon, Homeospira, Orthis, Plectambonites, Rhynchonella, Sphærexochus.
pittsfordensis—Eurypterus.
placidus (a)—Cytherodon, Murchisonia.
plagosa—Beyrichia.
planidorsatum—Cyrtoceras, Tripteroceras.
planifrons—Anomocarella, Dicellocephalus, Dikelocephalus.
planilateralis—Meekospira, Subulites (Polyphemopsis).
planisinuosus—Prosserella, Reticularia.
planistria (um)—Raphistoma, Scalites, Straparollus.
planistriata—Ambonychia.
planoconvexa (um)—Anoplotheca, Atrypa, Cœlospira, Hemipronites, Leptocœlia, Orthoceras, Strophomena, Streptorhynchus, Tripteroceras, Triptoceras.
planodorsata (um)—Ctenodonta, Cyrtoceras, Protowarthia, Sinuites, Strophomena, Tellinomya, Tripteroceras, Triptoceras.
planorbiformis—Lituites, Palæonautilus, Trocholites.
planostiolata—Pachypora (Platyaxum).
planulatoides—Helicotoma.
planulatus (a)—Cleidophorus, Clidophorus, Fusispira, Helicotoma, Helicotoma robusta, Nuculites, Periploma.
planumbonus (a, um)—Leptæna, Hemipronites, Streptorhynchus, Strophomena,
planus (a, um)—Asaphellus, Constellaria constellata, Constellaria florida, Deltoceras, Didymograptus nicholsoni, Eurymya, Eurymyella, Hemigyraspis, Isotelus, Leda, Lyrodesma, Modiolopis, Monticulipora parasitica, Oriostoma, Orthis, Semicoscinium, Stropheodonta (Brachyprion.)
platycaudatus—Dalmanites.
platycephalus (a)—Asaphus, Brongniartia, Calymene, Isotelus.
platymarginatus—Isotelus.
platyphylla—Phænopora, Ptilodictya.
platys—Dinorthis, Orthis, Pachypora (Platyaxum), Plæsiomys, Platyaxum.
platystoma—Bellerophon, Bellerophon (Bucania).
plauta—Holopea.
plebeia (um)—Cypricardites, Cyrtodonta, Oncoceras, Whitella.
plebia (um)—Diaphorostoma, Platyostoma.
plenus (a)—Atrypa, Holocystites, Camarotœchia, Rhynchonella.
pleurexanthemus—Ceraurus, Cheirurus.

pleuriexcavatum—Astylomanon.

pleuristriata — Stropheodonta corrugata, Strophomena corrugata.

plicatellus (a)—Atrypa, Leptæna, Orthis, Plectambonites, Plectorthis, Rhynchonella, Spirifer.

plicatulum (a)—Anoplotheca, Cœlospira, Cyathophyllum, Leptocœlia, Rhynchonella.

plicatus (a, m)—Anomalodonta, Atrypa, Cyathophyllum, Delthyris, Eurystomites, Ischyrinia, Orthis, Rhynchonella, Spirifer (Delthyris) modestus, Strophomena (Hemipronites), Technophorus.

plicifera—Atrypa, Dalmanella, Leptæna, Rhynchonella, Strophomena.

pluma—Hallia.

plumaria—Ptilodictya.

plumosus (m)—Actinocrinus, Chloephycus, Clematocrinus, Cordylocrinus, Glyptocrinus, Platycrinus, Ptilograpsus, Ptilograptus.

plumula—Chætocladus.

plumulosus—Inocaulis.

pluto—Lituites.

poctai—Ptilograptus.

pogonipensis — Lingulella, Modiolopsis, Obolus, Orthis, Pianodema.

politus (a)—Camarella, Prionodus.

polydactylus—Cupulocrinus, Dendrocrinus, Homocrinus, Poteriocrinites, Poteriocrinus,

polydorus—Ceraurinus, Ceraurus, Cheirurus.

polygyratus—Euomphalus, Polygyrata.

polymorphum—Dictyonema.

polynema—Protospongia.

polystomella—Constellaria, Monticulipora, Stellipora.

polythecatus—Dicellograptus intortus.

polyxo—Botryocrinus, Cyathocrinus, Heterocrinus (Iocrinus), Homocrinus,

pompilius—Ceraurinus, Ceraurus, Ceraurus (Crotalocephalus), Cheirurus.

pomponius—Nautilus.

ponderosa — Anolotichia, Cypricardites, Cyrtodonta, Escharopora, Maclurea, Maclurites, Nicholsonella, Platystrophia, Ptilodictya, Rafinesquina alternata.

ponepunctus—Agnostus trisectus.

porcata—Dinorthis, Dinorthis (Plæsiomys), Orthis.

porcia—Clitambonites.

porrecta—Dalmanella, Dalmanella testudinaria, Orthis.

porteri—Orthoceras.

portlocki—Huronia, Orthoceras.

postelegantula—Dalmanella.

posterus—Climacograptus caudatus.

posthuma—Parabolinella.

posticus (a)—Dendrocrinus, Modiolopsis, Poteriocrinites, Poteriocrinus.

postlatum—Endodesma.

postplicatum—Modiolopsis.

postremus—Glossograptus quadrimucronatus, Goniograptus thureaui.

postriatus (a, um)—Arca, Cardiomorpha, Lyrodesma, Modiolodon, Nucula, Nuculites.

postumius (a)—Cyrtoceras, Pleurotomaria.

poterium—Astylomanon cratera.

powersi—Archinacella, Gomphoceras, Triblidium.

præcedens—Ceratiocaris (Limnocaris), Favosites helderbergiæ.

præcipta (um)—Cyclonema (Gyronema), Homotrypa curvata, Whitella.

præcursa—Byssonychia.

præcursor—Camarotœchia (Stegerhynchus) whitii, Rhynchonella (Stegerhynchus) whitii, Sigmagraptus.

præformosa—Rhynchospira.

prægracilis—Dendrograptus.

præmarginalis—Atrypa.

præmaturus (m)—Mælonoceras, Marsipiocrinus, Marsupiocrinus, Phragmoceras, Platycrinus.

præmorsa—Astylospongia, Astylospongia pusilla, Caryospongia, Siphonia.

prænuntia—Dekayella, Dekayella nævigera, Klœdenia, Meristella.

præplicata—Stropheodonta.

prævium—Liospira, Raphistoma.

prævolutus—Clidophorus.

pravum—Heliophyllum.

precius—Aulopora, Aulopora compressa.

precosis—Leptæna, Plectambonites.

precursor—Leptæna richmondensis, Loculipora ambigua, Platystrophia colbiensis, Strophomena vetusta.

prematurum—Tarphyceras.

prenuntius—Promopalæaster.

preoblata—Rhipidomella.

pressula—Zaphrentis.

pretensa—Scenella.

pretiosa—Acrothele, Billingsia, Elkania, Linnarssonia, Obolella.

priamus—Orthoceras.

primævus (a, um)—Leperditia balthica, Nanno, Sphenophyllum, Styliola.

primigenius (a, um)—Chonetes (Eodevonaria), Modiolopsis, Orthoceras, Palæarca, Trematopora, Unio.

primitiva—Berenicea.

primordialis (e)—Billingsella, Streptorhynchus.

primus (a)—Chætomorpha, Cybele, Cybeloides, Glaphurus, Lingula, Lingulella, Michelinia, Orbicula, Rhinopora.

princeps—Proetus.

prinstana—Athyris, Hindella, Meristella.

priodon—Graptolithus, Lomatoceras, Monograptus, Monograptus (Graptolithus) clintonensis.

priscus (a, um)—Atrypa, Cyrtendoceras, Dictyorhabdus, Ecculiomphalus, Eccyliomphalus, Ectomaria, Eunema, Fenestella, Glyptocrinus, Monomorella, Periglyptocrinus, Ptychocrinus, Schizambon, Solenospira, Stropheodonta, Strophomena, Terebratula.

pristiniformis—Diplograptus, Graptolithus.

pristinus (a, um)—Callonema, Camarotœchia, Eurypterus, Hybocrinus, Oncoceras.

pristis—Diplograpsus, Diplograptus, Graptolithus.

proavitus (a)—Dinorthis, Mesopalæaster, Orthis, Rensselaeria (Beachia).

proavium—Coscinium.

proavus (a)—Coscinium, Gorgonia, Graptodictya.

problematicus (a)—Dendrograptus, Gissocrinus, Hybocystis, Hybocystites, Inocaulis.

proboscid(i)alis—Cladopora, Eucalyptocrinus, Striatopora.

proboscidia—Boliviana.

proboscidiatus—Dendrocrinus.

procera—Lophospira.

procia—Orthis.

proclivis (e)—Platyceras, Eccyliomphalus, Eccyliopterus.

procris—Hormotoma, Murchisonia.

procteri—Lingula, Rhynchonella, Rhynchotrema.

procursus—Arabellites.

productifrons—Cymatonota, Orthodesma.

productus (a)—Lophospira, Plectambonites, Rhytimya.

profundosulcata—Orthis, Platystrophia.

profundus (a, um)—Bellerophon, Brachprion, Cyathophyllum, Cylindrohelium, Leptæna, Meristina, Ophileta, Petraia, Streptelasma, Streptoplasma, Strophedonta, Strophodonta, Strophomena.

progne—Lingula, Liospira, Pleurotomaria

prognosticus (a)—Gypidula (Sieberella. coeymanensis, Spirifer (Delthyris) vanuxemi.

progressum—Orthoceras.

projectum—Gomphoceras.

prolatum—Orthodesma.

prolifera (um)—Cryptozoon, Dekayia, Diphyphyllum, Eridophyllum.

prolificus (a)—Ceraurus (Pseudosphærexochus), Cheirurus, Dekayella perfrondosa, Favosites, Heterotrypa, Heterotrypa subramosa, Monticulipora, Pterinea, Pterygotus, Schuchertella, Zaphrentis.

prolixa—Fenestella.

prolongatus (a)—Leptæna, Leptæna transversalis, Platystrophia acutilirata, Plectambonites transversalis, Strophonella, Subulites.

prominens—Constellaria, Constellaria constellata, Constellaria florida, Eurypterus, Eurypterus (Dolichopterus), Homotrypa wortheni.

promiscuum—Astylomanon cratera.

prona (um)—Crania, Petrocrania, Platyceras.

propinquus (a, um)—Hemipronites, Heterocrinus heterodactylus, Orthoceras, Schuchertella, Stenocrinus heterodactylus.

proprius (a)—Archinacella, Cornulites, Metoptoma.

proserpina—Helicotoma, Holopea.

prosseri—Schizolopha, Whitfieldella.

proteiforme—Cameroceras, Endoceras.

proteus—Calceola.

prototypum—Astylomanon cratera.

proutana—Stomatopora.

proxima—Reticularia.

proximatus—Clonograptus.

prunus—Girvanella, Strephochetus.

psyche—Fusispira, Maclurea, Maclurites, Subulites.

pterocephalus—Illænus, Thaleops.

ptyonurus—Corydocephalus, Lichas (Dicranogmus).

pudicus (a)—Cruziana, Rusophycus.

puella—Lyellia, Plasmopora.

pugnax—Lichas, Metopolichas.

pugnus—Nereites, Nereograpsus.

pulaskiensis (e)—Archinacella, Orthodesma.

pulcella—Cyclora.

pulchellus (a, um)—Actinomya, Arthroclema, Callopora, Chætetes, Codaster, Ctenodonta, Cyathocrinus, Gyronema, Hallopora, Leda, Lophospira, Lyrodesma, Modiolopsis, Palæaster, Palæocrinus, Petraia, Phacops, Stenaster, Stephanocrinus, Tellinomya, Urasterella, Urasterella (Stenaster).

pulcher (ra)—Acanthograpsus, Acanthograptus, Homotrypa, Nicholsonella, Palæocystites.

pumila—Amplexopora, Bollia, Orthis, Pachydictya.

pumilis—Straparollus.

punctatus (a)—Bucania, Comarocytis, Comarocystites, Constellaria, Cremacrinus, Ctenobolbina, Cybele, Encrinurus, Idiotrypa, Illænus, Indianocrinus, Monticulipora, Moorea, Phænopora, Ptilodictya, Trematopora.

punctifrons—Bellerophon, Bucania.

punctipora—Stictopora.

punctostriatus (a, um)—Fenestella, Orthis, Orthoceras, Polypora, Technophorus, Trematis.

punctulata—Bythocypris.

pungens—Climacograptus.

pusillus (a, um)—Astylospongia præmorsa, Baltoceras, Battus, Bryograptus, Calceola, Ceratiocaris, Colpomya, Conophrys, Cyathocrinus, Cyrtoceras, Graptospongia, Lecanocrinus, Shumardia.

pustulatus (m)—Arionellus, Cyathophyllum (Calophyllum), Glaphurus.

pustulosus (a, um)—Amplexopora, Beyrichia, Beyrichia tuberculata, Eoharpes, Eurypterus, Holocystites, Monticulipora, Stromatopora, Trematis, Stromatocerium, Stromatopora (Cœnostroma).

puteatum—Heliophyllum.

puteolus—Lecanocrinus.

putillus (a)—Anodontopsis, Atrypa, Climacograptus, Diplograptus, Diplograptus teretiusculus, Graptolithus, Triplesia, Zygospira.

pygmæus (a, um)—Diplograptus euglyphus, Petraia, Streptelasma, Strombodes, Tetragraptus.

pygmœa—Aulopora.

pylades—Orthoceras.

pyramidalis (e)—Cyrtina, Goniophyllum, Orthis, Scenidium, Skenidium, Spirifer.

pyramidata (um)—Cyclonema, Skenidium.

pyrene—Holopea.

pyriformis (e)—Archæocrinus, Astrocerium, Cyathocrinites, Cyathocrinus, Favosites, Heliolites, Periechocrinus, Pisocrinus, Rhodocrinus, Saccocrinus, Thysanocrinus, Triacrinus, Zophocrinus.

pyrrha—Camarotœchia, Rhynchonella.

python—Actinoceras, Deiroceras, Orthoceras.

quadrangularis (e)—Cypricardites, Dictyonema, Strombodes, Whitfieldella, Whitella.

quadraticaudatus—Asaphus, Pterygotus.

quadratus (a)—Arabellites, Bathyurus, Chætetes, Conularia, Helopora, Leistegium, Lingula, Modiolopsis leightoni, Monotrypella (Rhombotrypa), Monticulipora, Monticulipora (Monotrypa), Nematopora, Parabolinella, Rhombotrypa.

quadribrachiatus—Graptolithus, Tetragrapsus, Tetragraptus.

quadricarinata—Pleurotomaria.

quadricostata—Ampyx, Atrypa, Microdiscus, Rhynchonella, Triplesia.

quadrifida—Beyrichia, Ceratopsis.

quadrilatera—Cypricardites, Leptæna.

quadrilirata—Beyrichia, Strepula, Tetradella.

quadriloba—Hemisterias.

quadrimucronatus—Diplograpsus, Diplograptus, Glossograptus, Graptolithus, Orthograptus.

quadripartitum—Dactylophycus.

quadriplicata—Rhynchotreta, Trematospira.

quadrisulcata—Conularia, Lophospira, Murchisonia.

quebecensis (e)—Cyathophycus, Cyrtoceras, Dianulites, Diplotrypa, Halysites catenularia, Lingula, Loganellus, Mesotrypa, Metoptoma, Palæacmæa, Pleurotomaria.

quichuana—Pizarroa.

quincuncialis—Technophorus punctostriatus, Trematis.

quinquedentata—Fistuliporella.

quinquelobus—Pisocrinus.

quinquepartitus—Glyptocrinus, Stephanocrinus.

quinquespinosa—Acidaspis.

racemosum—Tetradium.

racinensis — Pleurotomaria, Mourlonia, Spirifer, Zaphrentis.

radialis—Scenella, Vinella.

radians—Calamopora, Cyrtia.

radiatus (a)—Ambonychia, Amygdalocystis, Amygdalocystites, Byssonychia, Carabocrinus, Calyptograpsus, Calyptograptus, Ceramopora, Climacospongia, Delthyris, Elpe, Halysites, Leperditia, Rhytimya, Scenellopora, Spirifer, Spirifer (Eospirifer), Spirifer plicatella, Triplecia, Triplesia.

radicans—Prioniodus, Streptelasma, Zaphrentis.

radiciformis—Vinella.

radiculus (a)—Calceocrinus, Cremacrinus, Cyathophyllum, Polyorophe, Proclivocrinus.

raei—Cyrtoceras, Ooceras.

ramifer—Callicrinus, Eucalyptocrinus.

ramosus (a, um)—Aristophycus, Buthotrephis, Callopora, Callopora rugosa, Chætetes, Cladograpsus, Dicranograptus, Eschara, Escharopora, Graptolithus, Graptolithus (Diplograpsus), Hallopora, Heterotrypa, Monticulipora, Peronosporites, Thresherodiscus.

ramsayi—Pleurotomaria.

ramulosus (a, um)—Archæocrinus, Buthotrephis, Bythotrephis, Cœnites, Glyptocrinus, Homotrypa, Inocaulis, Limaria, Lioclema, Palæodictyota, Syringopora.

ramulus—Dichograpsus, Dicranograptus, Graptolithus, Graptolithus (Climacograptus), Graptolithus (Monoprion).

ranilarva—Eurypterus.

rapax—Endoceras.

raptor—Orthoceras.

raricostatus—Cryptonymus, Encrinurus.

raripora—Ceramopora, Nematopora, Ptilodictya, Stictopora.

rarus—Bathyurellus, Ceraurus, Ceraurus (Cyrtometopus), Dolichometopus, Encrinurus.

rauchi—Ambonychia.

rayi—Columnopora.

raymondi—Cyrtospira, Holopea, Subulites.

recedens—Leptæna, Orthoceras, Plectambonites.

recta—Cymatonota, Escharopora, Eurymyella, Leptæna, Modiolopsis, Orthodesma, Palæodictyota bella, Plæsiomys, Ptilodictya, Rhytimya, Stomatopora, Strophomena.

rectangularis (e)—Favosites, Lophospira, Monticulipora, Protowarthia, Sinuites, Trochonema.

rectiannulatum—Cycloceras (Spyroceras), Orthoceras.

recticameratum—Orthoceras.

recticulatus—Alveolites, Favosites.

rectiformis—Modiolopsis.

rectilateralis—Lingula, Lingula (Pseudolingula).

rectilinea—Chaunograptus.

rectilineata (um)—Cladopora, Dictyonema.

rectimuralis—Monotrypa.

rectirostris (a)—Cypricardites, Meristella, Meristina, Vanuxemia.

rectistriata—Lophospira.

rectus (m)—Arabellites, Clathrodictyon, Crinocystites, Cyrtoceras, Dendrograptus, Dicellograptus divaricatus, Dicranograptus, Didymograptus, Modiolopsis, Monograptus, Orthoceras, Orthoceras (Euorthoceras), Orthodesma, Rhodocrinus, Streptorhynchus.

recurvirostris (a) — Anazyga, Atrypa, Rhynchonella, Zygospira.

recurvus (a, um)—Bellerophon, Ctenodonta, Hypseloconus, Metoptoma, Tellinomya.

refulgens—Monobolbina, Obolus.

regius—Cleiocrinus.

regularis (e)—Beyrichia, Bollia, Ceratopora, Cyrtoceras, Diplotrypa, Mesotrypa, Platystrophia, Streptotrochus, Subulites, Tentaculites, Thamniscus.

reinwardtii—Clavæblastus, Pentatrematites, Pentremites, Troostocrinus.

remipes—Eurypterus.

remotiseptum—Actinoceras, Hormoceras, Ormoceras.

remotus (a)—Clonograptus, Dichograptus, Discosorus, Grammysia.

remus—Orthoceras.

reniformis (e)—Beyrichia logani, Primitia logani, Rhombodictyon.

rensselærica—Eurychilina subradiata.

repens—Alveolites, Aulopora, Millepora, Orthoceras, Vinella.

repertus (m)—Spirifer (Eospirifer), Tryblidium.

resplendens—Leperditia.

reticularis—Anomia, Atrypa, Crania, Terebratula, Trematis.

reticulatus (a, um)—Actinopteria, Anomaloides, Anomalospongia, Chasmatopora, Cladopora, Cyathodictya, Cyathophycus, Dictyograptus, Dictyonella, Dictyostroma, Eichwalida, Eschara, Eurychilina, Favistella, Intricaria, Leptæna, Orbitolites, Orbituloides, Phylloporina, Receptaculites, Rhynchonella, Strophomena, Subretopora, Tretaspis.

retiformis—Dictyonema, Gorgonia, Syringopora.

retractilis—Dendrocrinus.

retroflexa—Clitambonites (Gonambonites) plana, Gonambonites plana.

retrorsus (a, um)—Ambonychia, Byssonychia, Calymene meeki, Ctenodonta, Cyrtolites, Dinorthis, Metoptoma, Nematopora, Orthis, Plæsiomys, Trochonema, Tryblidium.

reversata—Orthis biforata, Platystrophia, Streptaster.

reversus (a, um)—Anastrophia, Arthropora, Brachymerus, Crania, Cyrtoceras, Holopea, Parastrophia, Pentamerus.

revoluta—Pterinea, Rhombopteria (Newsomella).

rhine—Hyolithes.

rhinoceros—Amphilichas.

rhombicus (a)—Chætetes, Micropora.

rhombiferus—Cyathocrinus, Palæocrinus.

rhombiforme—Rhombodictyon reniforme.

rhomboidalis—Conchita, Leptæna, Plectambonites, Strophomena.

rhomboidea (um)—Avicula, Cleionychia, Clionychia, Leptodesma, Modiolopsis, Posidonomya, Pterinopecten.

rhombolineare—Gyroceras.

rhynchonelliformis—Orthis, Rhipidomella, Rhipidomella uberis.

rhyncocephalus—Acidaspis.

rhythmoides—Orthoceras (Eu-orthoceras)

richardsoni (i)—Actinoceras, Arachnophyllum, Beyrichia, Canistrocrinus, Clonograptus, Drepanella, Eopteria, Glyptocrinus, Graptolithus, Graptolithus (Monoprion), Holograptus, Levisia, Orthoceras, Reteocrinus, Rouvilligraptus, Strombodes, Subulites.

richmondensis (e)—Archinacella, Bucania, Byssonychia, Conocardium, Cornulites, Girvanella, Hebertella alveata, Homotrypa, Leptæna, Protarea, Raphistoma, Salpingostoma, Strephochetus, Strematocerium, Tentaculites.

riciniformis—Lingula, Lingula (Glossina).

ridleyana—Protorhyncha, Rhynchonella.

rigidus (a, um)—Clonograptus, Columnaria alveolata, Cyrtoceras, Dicellograptus, Dicellograptus divaricatus, Dichograpsus, Graptolithus, Graptolithus (Monoprion), Orthoceras, Palæasterina, Petraster, Stictoporella.

ringuebergi—Nicholsonella.

robbinsi—Amphilichas, Eunema, Lichas (Hoplolichas), Lichas (Platymetopus), Trochonema (Eunema).

robertsoni—Eurystomites, Lituites.

robsoni—Tripleuroceras.

robustus (a, um)—Ambonychia, Amplexopora, Aparchites minutissimus, Atrypa, Beyrichia, Beyrichia chambersi, Byssonychia, Bythocypris, Ceratopsis chambersi, Ceraurus (Sphærocoryphe), Ctenodonta nasuta, Dekayella, Dekayella ulrichi, Dekayia ulrichi, Dictyonema, Eurypterus, Helicotoma planulata, Hughmilleria socialis, Lamptcrocrinus, Licrophycus, Megalomphala, Nereites, Nereograpsus, Pachydictya, Pleurocystis, Pleurocystis squamosa, Pleurocystites, Pleurocystites squamosa, Protaxocrinus, Rhynchonella, Scenella, Sphærocoryphe, Streptelasma.

roemerana—Brachiospongia.

roemeri—Caryocrinites, Caryomanon, Cyrtocrinus, Dimerocrinus, (Eospongia), Gypidula, Melocrinus, Meristina maria, Orthothetes, Schuchertella, Sieberella, Strophonella.

rogata—Dalmanella, Orthis.

rogersensis—Bellerophon, Clitambonites, Clitambonites diversus, Conularia trentonensis, Dalmanites carleyi, Hebertella (Eridorthis), Modiolopsis, Orthoceras, Plectorthis (Eridorthis), Pterygometopus carleyi.

rogersi—Lingulella, Obolus (Lingulella), Obolus (Westonia).

rollinii—Cyathophyllum.

romingeri—Asaphus, Basilicus, Chalazodes, Glassia, Huronia, Lophiostroma, Ptychopyge, Sphærexochus.

roosevelti—Pseudoniscus.

rosaeformis—Cupellæcrinites, Cupellacrinus, Marsipocrinus.

rossi—Protowarthia, Sinuites.

rostellum—Spirifer, Spirifer (Cyrtia).

rostralis—Hindella (Greenfieldia).

rostratus (a)—Calymene, Calymenella, Œnonites.

rotadentatus—Cyclograptus.

rotalineatum—Gyronema.

rottermundi—Endoceras, Orthoceras.

rotulata (um)—Actinoceras, Cyrtodonta, Orthoceras.

rotuliformis—Euomphalus (Raphistoma), Raphistoma.

rotuloides—Cyclolites, Pleurotomaria.

rotundatus (a)—Bellerophon, Bucania, Cypricardites, Maclurea, Maclurites, Megalomphala, Nucleospira, Obolus, Obolus (Lingulella), Vanuxemia, Whitfieldella.

rotundifrons—Cyclognathus.

rotundispira—Pleurotomaria.

rotundus (a, um)—Acrothele, Anastrophia hemiplicata, Archinacella, Dawsonia, Dianulites, Eucalyptocrinus, Eurystomites, Holocystites, Holopea, Linipora, Parastrophia hemiplicata, Triblidium.

rubra—Leiopteria.

ruda—Modiolopsis.

rudis—Dystactospongia, Pachydictya (Rhinidictya), Primitia, Ptilodictya, Saccospongia, Schizocrania, Trematis.

ruedemanni—Dictyonema flabelliforme, Diplograptus.

rugælineata (um)—Cyclonema, Euomphalus (Cyclonema), Poleumita.

rugæplicata—Orthis.

rugata—Liospira, Raphistomina.

rugatina—Archinacella, Bucania, Delthyris, Whitella.

rugatula—Pterinea, Zaphrentis.

rugicosta — Delthyris, Rhynchonella, Spirifer (Delthyris).

rugiplicata—Orthis.

rugosum—Trochonema.

rugosus (a, um)—Atrypa, Avicula, Batostoma, Bellerophon, Bucania, Calceocrinus, Callopora, Callopora ramosa, Calymene, Camarocladia, Castocrinus, Chætetes, Columnaria, Conularia, Cruziana, Cypricardites, Cyrtodonta, Cytherella, Cytheropsis, Dendroclonella, Diphyphyllum, Diplograptus, Eridophyllum, Fistulipora, Hallopora, Harmodites, Hudsonaster, Leptæna, Loxonema, Matheria, Monticulipora, Monticulipora ramosa, Monticulipora (Heterotrypa) ramosa, Murchisonia, Palæasterina, Palæophycus, Palæophyllum, Plectambonites, Primitia, Rhynchonella, Stromatocerium, Stromatopora, Strophomena, Strophomenes, Trachyum, Walcottia.

rugulifera—Beyrichia, Primitia.

rugulosus—Agnostus pisiformis.

ruida (um)—Dalmanella, Orthis, Raphistoma.

rusti—Conotreta.

rusticus (a, um)—Dendrocrinus, Grammysia, Homotrypella, Monticulipora (Fistulipora), Pachydictya, Petraia, Ptilodictya, Streptelasma, Zaphrentis.

rutilius—Ampyx, Ampyx (Lonchodomas).

rutrellum—Eoharpes, Harpina.

rutuloides—Palæocyclus.

sacculus—Receptaculites, Saccocrinus, Thecocystis.

saffordi—Actinomya, Anoplotheca, Bathyurus, Clioderma, Cœlospira, Cyrtoceras, Cyrtodonta, Cypricardites, Hallina, Isochilina, Lloydia, Lophospira, Murchisonia, Orthis, Orthodesma, Palæarca, Pterotheca (Clioderma), Rhipidomella, Rhynchonella, Spirifer (Delthyris), Whiteavesia, Wilsonia, Zygospira.

sagittarius—Didymograptus, Graptolithus, Monograptus.

sagitticaulis—Didymograptus.

saienzii—Tentaculites.

salopiensis—Dicellograptus divaricatus.

saltænsis—Pterygometopus, Orthis.

salteri—Amphion, Callograptus, Cyclocystoides, Eunema, Hormotoma, Loxonema, Menocephalus, Obolella, Obolus, Pliomerops, Sphærocoryphe, Stenaster, Stricklandinia, Trochonema, (Eunema).

sancta—Rhynchonella, Stephanella.

sanctipauli—Primitia.

sanctisabæ—Euomphalus, Straparollus.

sandalina—Calceola.

sanguinolaroidea—Lyonsia, Tellinomya, Tellinomya (Ctenodonta).

saratogensis—Agraulos, Billingsia, Matherella, Plethopeltis, Ptychoparia, Trochus.

sardesoni—Chætocladus, Cypricardites, Vanuxemia.

sarlei—Lepidocoleus, Mitoclema.

sarmentosa—Cladopora.

sarmienti—Maclurea, Maclurites.

satyrus—Ceraurus (Neiszkowskia), Cheirurus, Nieszkowskia, Pseudosphærexochus (Nieszkowskia).

sauridens—Poterioceras.

savagei—Aulocerium.

saxea—Leptæna, Plectambonites.

saxiroseum—Cryptozoon.

sayi—Orthoceras.

scabiosa—Crania, Petigopora, Philhedra.

scabra (um)—Dermatostroma, Labechia, Stromatopora.

scala—Cyrtodonta.

scalariformis—Dictyonema, Orthoceras.

scalaris — Climacograptus, Leperditia, Leperditia gibbera.

scalpellum—Stictopora.

scammoni—Orthoceras.

scamnata—Poleumita.

scapha—Cuneamya.

scaphula—Orthodesma.

scarabæoides — Entomostracites, Paradoxides, Peltura, Olenus, Trilobites.

scharenbergi—Climacograptus.

scheii—Lissatrypa.

schizocrinus—Podolithus.

schlotheimi—Apatokephalus, Remopleurides.

schmidti—Dalmanites, Leperditia, Pterygometopus.

schohariae—Aulopora.

schoolcrafti—Cyrtocerina.

schuchertana—Catazyga headi, Glassia.

schucherti—Atactoporella, Aulopora, Bathyurus, Cyathophyllum, Fusispira, Homeospira, Lingulasma, Lingulelasma, Orbiculoidea, Orthoceras, Orthodesma, Schizocrania, Tæniodictya.

scitulus (a)—Hallia, Holocystites, Nuculites, Pachydictya, Stictopora.

scobina—Lingula, Rhynchonella, Rhynchonella neglecta.

scofieldi—Anastrophia, Ceraurinus, Ceraurus, Ctenodonta, Cyrtoceras, Cyrtometopus, Isochilina, Macronotella, Parastrophia, Strophomena, Tellinomya, Whitella.

scoparius (m)—Conchidium, Dendrocrinus, Homocrinus, Lasiocrinus.

scorpionis—Eurypterus, Eusarcus.

scotica—Siphonotreta.

scovillei—Austinella, Dinorthis, Hebertella, Orthis, Plectorthis.

scrinium—Gomphoceras.

scrutator—Holopea, Nileus.

sculptilis—Bucania, Halliella, Lyriocrinus, Primitia, Rhodocrinus, Salpingostoma.

sculptus—Æthocystites, Archæocrinus, Balanocrinites, Cleiocrinus, Cyathocrinites, Cyathocrinus, Glyptocrinus, Melocrinites, Melocrinus, Rhaphanocrinus.

scutella—Zaphrentis.

scutellatus—Arabellites, Holocystites.

scutula—Anthaspidella.

secalinus—Diplograptus.

sectostriata—Cyclocœlia, Encuclodema, Orthis, Plectorthis.

securiformis—Avicula, Pterinea.

securifrons—Whitella.

sedentarium—Cystiphyllum.

sedgwicki — Actinoceras, Graptolithus (Prionotus), Menocephalus, Orthoceras.

seelyi—Bathyurus, Bolbocephalus, Isochilina, Lituites, Lophospira, Ooceras, Pagodia, Primitia, Tarphyceras.

selectus (a, um)—Dikelocephalus, Petraia, Pleurotomaria, Ptychaspis, Streptelasma.

selenecephala—Calymene.

selenoides—Receptaculites.

selkirkensis (e)—Dianulites, Mesotrypa, Orthoceras.

selwyni (i)—Goniograptus thureaui, Leperditia, Lingula, Monticulipora, Orthoceras, Prasopora.

semele—Plethospira, Pleurotomaria.
semicarinata (um)—Archinacella, Cyclonema, Gyronema.
semicostata—Ampyx, Ampyx (Lonchodomas).
semifasciata—Strophomena (Strophodonta), Strophonella.
semilunata—Bollia.
seminulum—Halliella.
semiovalis—Orthis pectinella, Strophomena.
semipilaris—Cyphotrypa, Leptotrypa.
semiplanata (um)—Jovellania, Orthoceras, Tripteroceras.
semiplicata — Atrypa, Camarotœchia, Rhynchonella.
semiradiatus — Actinocrinus (Saccocrinus), Clidophorus, Macrostylocrinus, Periechocrinus, Saccocrinus.
semistriata (um)—Cymatonota, Orthodesma.
senaria—Calymene, Calymene blumenbachii.
senecta—Modiolopsis, Orthis (Schizophoria), Schizophoria.
senex—Platyceras, Platystrophia acutilirata, Porcellia.
senilis—Rhinidictya mutabilis.
sentum—Eridophyllum.
separatus (a)—Homotrypa, Strombodes.
septatus (a)—Amplexus, Strophomena.
septembrachiatus—Agelacrinites, Agelacrinus.
septemnotatus—Protichnites.
septentrionalis—Ambonychia, Recticularia, Uncinulus.
septoris—Cyrtoceras, Gomphoceras, Septameroceras.
septosa—Amplexopora, Atactopora, Monticulipora.
sequens—Ophiletina sublaxa.
seriata—Cladopora, Favosites.
seriatopora—Alveolites.
sericeus (a)—Leptæna, Plectambonites, Strophomena, Trichospongia.
serpens—Aulopora.
serpularis—Cornulites.
serra—Fucoides.
serratulus — Didymograpsus, Didymograptus, Graptolithus, Graptolithus (Monograptus), Graptolithus (Monoprion).
serratus—Œnonites.
serrulata—Lophospira, Murchisonia.
servile—Orthoceras, Tripteroceras, Triptoceras.
sesostris—Dicellocephalus, Dikelocephalus, Ptychaspis.
sessilis—Stigmatella.
setaceus—Glossograptus.
setifera—Crania.
setigera—Crania, Eotrophonia.
severnensis—Tyrellia.
sevieri—Batostoma.
sexcarinata—Tetranota.
sextans—Dicellograptus, Dicranograptus, Diplograptus, Didymograpsus, Didymograptus, Graptolithus.
sextocatenatus—Halysites.
sha(e)fferi—Arthropora, Arthropora clevelandi, Glyptocrinus, Mesopalæster, Palæaster, Ptilodictya, Pycnocrinus, Stictopora.
shaleri—Brachyprion, Eurymyella, Eurymyella breva, Stropheodonta.
shawangunk—Hughmilleria.
shawi—Porocrinus.
shelbiensis—Bellerophon.
shepardi—Heliolites.
sheppardi—Spirifer.
sherzeri—Stylodictyon.
shriveri—Thecia.
shumardi — Amplexus, Camarocystites, Cyathophyllum, Cyrtoceras, Geisonoceras, Orthoceras, Zaphrentis.
sidenbladhi—Agnostus.
sieboldi—Orthoceras.
sigaretoides—Pleurotomaria.
sigilla—Mytilarca.
sigillarioides—Callopora, Chætetes, Hallopora onealli, Protostigma.
sigillaroidea—Callopora.
sigillaroides—Callopora, Protospongia.
sigillata—Beyrichia, Primitia.
sigmoidea — Cypricardites, Cyrtodonta, Whitella.
siliqua—Cytheropsis, Macrocypris.
siliquaria—Dawsonia, Lockeia.
sillimanensis—Cyrtodonta.
sillimani—Myrianites.
siluriana—Crania, Cyathophycus, Diplostenopora, Escharopora, Fistulipora, Gorgonia, Strophomena, Whitella.
siluriceps—Dolichopterus.
siluricus—Platycrinus, Pollicipes.
siluriense—Ascodictyon.
similior—Pentamerus, Spirifer, Spirifer (Martinia).

similis (e)—Arabellites, Archinacella, Bellerophon, Conradella, Dendrocrinus, Didymograptus, Eridotrypa, Eunema, Graptolithus, Helicotoma, Holopea, Homotrypa, Metoptoma, Modiolopsis, Phragmolites, Phyllograptus, Platystrophia, Stictopora, Stictotrypa, Tellinomya, Trochonema (Eunema), Tryblidium.

simillimus—Bathyurus.

simplex—Archinacella, Arthropora, Azygograptus, Beyrichia, Cyrtoceras, Dekayella prænuntia, Dendrograptus, Dicranella, Ectenocrinus (Heterocrinus), Eunicites, Fucoides, Gypidula, Heterocrinus, Heterocrinites, Ichthyocrinus, Lecanocrinus, Mastigograptus, Metoptoma, Octonaria, Onchometopus, Palæaster, Palæophycus, Protoscolex, Rhynchotreta, Spirifer (Delthyris) crispis, Spirifer (Reticularia) crispus, Tetradella, Tetradella quadrilirata, Thlipsura, Trematospira, Tryblidium.

simpsoni—Endoceras, Narthecoceras, Orthoceras.

simulans—Crepipora, Cyclonema, Eurymyella, Orthonota, Primitia, Primitiella.

simulator—Illænus, Orthoceras.

simulatrix—Archinacella, Batostomella, Bucania, Ctenodonta, Eridotrypa, Hormotoma, Modiolopsis, Monticulipora, Murchisonia, Prasopora.

sinemurus—Strombodes.

singularis (e)—Bucania, Callopora, Dekayella, Heterotrypa, Leioclema, Monticulipora, Trematopora.

sinistra—Polygyrata.

sinosus—Meristina profunda.

sinuatus (a, um)—Anatina, Cypricardites, Cyrtoceras, Cyrtolites, Delthyris, Euomphalus, Hebertella, Hebertella occidentalis, Hemiptronites, Ilionia, Leperditia, Modiolopsis, Orthis, Orthis occidentalis, Orthodesma, Orthothetes deformis, Psiloconcha, Retzia, Rhynchospira, Rhytimya, Schuchertella, Straparollus, Streptorhynchus, Strophomena.

sinuosus (a)—Ctenodonta, Cyrtolites, Nucula.

sipho—Acrotreta.

siphonatus—Glyptocrinus.

skiffi—Stephanocrinus.

smithi—Bathyurus, Dalmanella, Dicellograptus, Haploconus, Orthis (Dalmanella), Porocrinus.

smocki—Klœdenia.

sobrina—Homeospira, Retzia.

socialis (e)—Crania, Ctenodonta, Cytherodon, Dictyonema, Graptopora, Hughmilleria, Orthoceras, Orthoceras (Geisonoceras), Tellinomya, Tellinomya (Nucula), Zaphrentis.

sol—Cheirurus, Heliomera.

sola—Orthis, Rhipidomella.

solarioides—Pleurotomaria, Pycnomphalus.

solidissima—Fistulipora, Lioclemella.

solidus (a)—Crepipora, Eridotrypa, Eurychilina, Homotrypa, Lecanocrinus, Trematopora.

solitarius (a, um)—Athyris, Bathyurus, Bellerophon, Ceraurus, Cheirurus, Chonophyllum, Cyathophyllum, Cyrtodonta, Discina, Heterotrypa, Lloydia, Whitfieldella.

solivaga—Hyalostelia.

solutus (a)—Loxoplocus, Murchisonia.

sordidus (a, um)—Atrypa, Cyclocœlia, Encuclodema, Leptella, Maclurea, Maclurites, Ophileta, Orthis, Orthoceras, Plectorthis, Rhynchonella, Straparollus.

sororcula—Lophospira, Murchisonia.

southwelli—Ascoceras.

sowteri—Modiolopsis.

spangleri—Holocystites.

spania—Orthis flabellites.

sparsiplica—Cyclospira.

sparsus (a, um)—Arenicolites, Diploclema, Heliolites, Trematopora.

spaskii—Cyclocrinites, Cyclocrinus.

spatiosa—Crepipora.

speciosus (a, um)—Actinocrinus, Goniophora, Goniophorus, Gyronema, Heliolites, Lyellia, Maclurea, Maclurites, Orthonota, Palæaster, Palæasterina, Periechocrinus, Petraster, Promopalæaster, Propora, Ptychaspis, Saccocrinus, Whitfieldella.

spectabilis—Ctenopyge, Leptoplastus.

spenceri—Dictyonema.

sphæricus—Holocystites.

sphærion—Leptotrypa, Paleschara, Paleschara (Chætetes).

sphæroidalis (e)—Actinoceras, Hindia, Holocystites, Huronia, Stribalocystites, Orthoceras.
spicula—Fusispira.
spiculata—Trematopora.
spindicandum — Chalazodes, Lophiostroma.
spinea—Homotrypa.
spinifer (a, um)—Calymene, Climacograptus typicalis, Cypricardites, Cyrtodonta, Dicranograptus, Dicranograptus ramosus, Dictyonema, Homotrypa, flabellaris, Leptograptus flaccidus.
spiniformis—Arthroclema, Helopora.
spiniger—Acantholenus, Acidaspis, Anomocare, Bathyurus, Leptoplastus.
spinigerus (a)—Crania, Favosites, Favosites niagarensis.
spiniporus—Heliolites.
spinosula—Monotrypa.
spinosus (a)—Æchmina, Beyrichia, Bryograptus, Chonetes jerseyensis, Clonograptus, Cytherina, Dendrograptus, Dicranella, Didymograptus, Eridotrypa, Helicotoma, Leptoplastus, Mesotrypa, Paleocoma, Proetus, Stigmatella, Tæniaster, Trematopora primigenia, Triarthrus.
spinulifera—Rhombotrypa.
spinulocervix—Cyphaspis.
spinulosus (a, um)—Bythopora, Cystiphyllum, Diplograptus, Entomostracites, Glossograptus, Graptolithus, Olenus, Palæaster, Parabolina, Paradoxides, Promopalæaster, Trematopora.
spinulus—Coleolus.
spiralis—Ecculiomphalus, Eccyliomphalus, Eccyliopterus.
spironema—Lophospira, Murchisonia.
spissiseptum—Orthoceras.
spissus (a)—Lingulella, Obolus (Lingulobolus), Sphæ.obolus.
splendens—Dictyonema, Gaurocrinus, Holocystitites, Homotrypa, Pachydictya, Ptychocrinus, Serpulites.
splendidus (a)—Conularia, Eucalyptocrinites, Eucalyptocrinus.
spongaxis—Streptelasma, Zaphrentis.
spongilla—Favosites.
spongioides—Solenopora.
spongiosa—Calostylis, Heliolites.
sponsa—Pleurotomaria.
springeri—Eucalyptocrinus.
springfieldensis—Illænus.
spurlocki—Proetus.
spyroceroides—Orthoceras (Spyroceras).
squamiformis—Craniops, Orbicula, Pholidops.
squamosus (a)—Orthis (Hebertella) fausta, Pleurocystis, Pleurocystites.
squamula—Rafinesquina, Strophomena.
stamineus (a, um)—Delthyris, Raphistoma, Scalites, Spirifer.
starri—Lingulella, Lingulepis.
steeli—Cryptozoon.
stegops—Isotelus.
stella—Phyllograptus.
stellaris—Reteocrinus, Retiocrinus.
stellatimsulcata (um)—Astylospongia, Caryomanon, Spongia, Carpomanon.
stellatus (a, um)—Agelacrinus, Ascodictyon, Camarocrinus, Ceramoporella, Columnaria, Cupellæcrinites, Cupellæcrinus, Eurypterus (Dolichopterus), Favistella, Hemicystites, Marsipocrinus, Palæasterina, Pseudocrinites, Schuchertia, Scyphia, Trentonaster.
stellifer—Protaster.
stelliforme—Heliophycus.
stelzneri—Leptæna, Maclurea, Maclurites.
stenactinotum—Dictyonema.
stenosus—Diplograpsus.
stenotoides—Anomocare.
sterlingensis—Cornulites, Cypricardites, Dolabra, Eurydictya, Rhynchotropis, Tentaculites, Whitella.
stevensoni—Platystrophia ponderosa.
stidhami—Cyphotrypa, Leptotrypa, Monticulipora.
stigmatus (a)—Calceocrinus, Cheirocrinus, Deltacrinus.
stigmosa—Bucania.
stokesi (i)—Asaphus, Columnaria (Palæophyllum), Diphyphyllum, Lithostrotion, Omphyma, Phacops, Proetus, Ptychophyllum, Zaphrentis.
stokesiana—Pleurotomaria.
stoneanus (a)—Lingulella, Obolus (Westonia).
stonemani (i)—Bathyurus, Proetus.
stonensis (e)—Cyrtoceras, Dalmanella, Orthis, Pianodema.
stosei—Saukia.
strangulatum—Endoceras proteiforme.
strenuus—Bathyurus, Lloydia.
striæcosta—Ambonychia, Pterinea.
striælineatum—Orthoceras.

striatellus (a, um)—Chonetes, Clathrodictyon, Orthis, Stromatopora.

striatissimus—Spirifer modestus.

striatomarginatus (a)—Beyrichia, Eurychilina.

striatopora—Helopora, Nematopora, Thamniscus.

striatulus (a, um)—Cyathophyllum, Cyclonema gracile, Orthis, Prolobella, Remopleurides.

striatus (a, um)—Arthroclema, Bythopora, Cladopora, Codonocheilus, Ctenocrinus, Cupellæcrinites, Cyathocrinus, Dendrograptus, Eridotrypa, Favastræa, Favosites, Helcionopsis, Leptæna, Lingula, Lyellia, Maclurea, Maclurites, Macrostylocrinus, Marsipocrinus, Marsupiocrinus, Megambonia, Modiolopsis, Nileus, Palæocrinus, Palæophycus, Plethospira, Pleurotomaria, Pterinea, Raphistoma, Sagenella, Scalites, Schizocrinus, Scyphocrinus, Sphenolium, Straparollus, Strombodes, Strophodonta, Strophomena, Strophonella, Strophonella (Amphistrophia), Trematopora, Triblidium, Triplecia (Cliftonia).

stricklandi—Terebratula, Uncinulus, Uncinulus (Uncinulina).

strictispiralis—Beyrichia tuberculata.

strictus—Callograptus, Inocaulis.

strigatus (a, um)—Liospira, Orthoceras.

strigillata (um)—Eunema, Trochonema.

strigosa—Glauconome, Helopora, Nematopora.

strix—Kionoceras, Orthoceras.

stromatoporoides—Alveolites, Pycnopegma.

strongi—Euomphalus, Oxydiscus, Sinuopea.

stropheodontoides—Brachyprion, Stropheodonta.

strophocrinus—Podolithus.

strophomenoides—Orthis lenticularis, Plæsiomys, Valcourea.

stylonuroides—Dolichopterus.

subabbreviata—Lophospira, Murchisonia.

subacutus—Cyrtolites, Oxydiscus, Technophorus.

subæqualis—Lichenocrinus, Schmidtella incompta.

subæquata—Crepipora, Dalmanella, Eurychilina, Orthis, Orthis (Dinorthis), Pianodema.

subalatus (a)—Modiolopsis, Murchisonia.

subangularis—Bellerophon, Ichthyocrinus.

subangulatus (a, um)—Bucania, Cruziana, Cypricardites, Cyrtodonta, Edmondia, Hormotoma, Palæarca, Pleuronotus, Orthodesma, Rusophycus.

subannulatus (a, um)—Cyrtoceras, Endoceras, Endoceras (Cameroceras), Maclurea, Maclurites, Proetus, Spyroceras.

subarctica—Fenestella.

subarcuatus (a, um)—Avicula, Cyrtoceras, Orthoceras, Modiolopsis.

subbaculum—Orthoceras.

subbrevis—Fusispira.

subcancellatum—Cyrtoceras, Orthoceras.

subcarinatus (a)—Actinomya, Ægilops, Carinaropsis, Cypricardites, Cyrtodonta, Cyrtodonta huronensis, Cyrtolites, Hormotoma, Modiolopsis, Whitella.

subcentrale—Endoceras.

subcircularis—Homœospira.

subcirculus (a)—Orthis, Rhipidomella.

subclavatus—Arionellus, Ptychaspis.

subcompressus (a, um)—Cyrtoceras, Cyrtoceras (Glyptoceras), Cyrtoceras (Glyptodendron), Cyrtolites, Protowarthia, Sinuites.

subconcava—Liospira.

subconicus (a)—Clathrospira, Holopea, Meekospira, Pleurotomaria, Subulites.

subcostulatum—Barrandeoceras.

subcrassus (a, um)—Actinocrinus, Ctenobolbina, Heterocrinus, Isocrinus, Trochonema.

subcuneatus—Pyrenomœus.

subcylindrica—Cytherina, Cytheropsis, Labechia, Leperditia, Macrocypris, Metablastus, Monticulipora, Pentremites, Stromatopora, Troostocrinus.

subdepressa—Pleurotomaria.

subelliptica (um)—Allodesma, Avicula, Ctenodonta, Cytherina, Cytheropsis, Eccyliomphalus, Lingula, Modiolopsis, Pholidops, Prolobella.

subelongata—Loxonema.

subelongus—Favosites.

suberecta—Byssonychia, Cypricardites, Plethocardia, Vanuxemia.

subfrondosa—Dekayia, Heterotrypa.

subfusiformis—Fusispira, Lioclemella, Loxonema, Monticulipora (Monotrypa), Murchisonia, Subulites.

subglobosus (a)—Chætetes, Cœlocystis, Eucalyptocrinus, Glyptocrinus, Glyptocrinus dyeri, Gypidula, Hemicosmites, Holocystites, Lampterocrinus, Macrostylocrinus, Monotrypa, Reteocrinus, Trematocystis.
subglobulus—Bellerophon.
subgracilis (e)—Bythopora, Gomphoceras, Homotrypella, Poteriocrinus.
subimbricatus (a)—Diamesopora, Hyolithes, Trematopora.
subjugata—Hebertella, Orthis.
sublævis (e)—Cyclonema, Cythere, Glyptocrinus dyeri, Leperditia, Orthoceras.
sublamellosa—Discina, Orbignyella.
sublata—Bucania, Pachydictya pumila.
sublaxa—Chasmatopora, Hormotoma gracilis, Ophileta, Ophiletina, Phylloporina.
sublenticularis—Polycope, Schmidtella.
submarginata—Lingula, Mesomphalus.
submersa—Spirifer sulcata.
submodiolaris—Lyonsia.
subnasutus (a, um)—Ctenodonta, Modiolopsis, Orthodesma.
subnodosus (a)—Buthotrephis, Callopora, Glyptocrinus, Hallopora, Isochilina, Orthis, Rhaphanocrinus.
suboblonga—Lingula.
suborbicularis—Whitella.
subovalis (e)—Modiolodon, Orthodesma, Psiloconcha.
subovatus (a)—Bellerophon, Clidophorus, Ctenodonta, Cypricardinia, Cypricardites, Cyrtodonta, Holocystites, Maclurea, Whitella.
subparallela—Modiolopsis.
subpatula—Bucania nana.
subplanus (a, um)—Avicula, Callopora, Cyrtolites, Discina tenuilamellata, Eurymya, Fusispira angusta, Hallopora, Hemipronites, Leptæna, Leiopteria, Liopteria, Lyrodesma, Orbiculoidea, Orthothetes, Pterinea, Pteronites, Raphistoma, Schuchertella, Streptorhynchus, Streptorhynchus (Strophodonta), Strophomena.
subpulchellus (a)—Chætetes, Dekayia, Dekayia perfrondosa, Heterotrypa, Monticulipora.
subquadrans—Tetradella.
subquadratus (a)—Christiania, Cypricardinia, Dinorthis, Helicotoma, Leptæna, Monotrypella, Monticulipora quadrata,
subquadratus—continued.
Orthis, Plæsiomys, Platystrophia, Pseudocrinites, Pterinea, Ptychopteria, Rhombotrypa, Whitfieldella.
subquadrilateralis—Modiolopsis.
subradiata—Eurychilina.
subramosa (um)—Atactopora, Dekayia, Heterospongia, Heterotrypa, Homotrypa, Lioclema.
subrectus (a, um)—Avicula, Aviculopecten, Ctenodonta, Escharopora, Modiolodon, Oncoceras, Pentamerus oblongus, Psiloconcha, Ptilodictya, Tellinomya.
subregularis—Zaphrentis.
subretiformis (e)—Calyptograpsus, Calyptograptus, Dictyonema.
subrhomboidea—Camarotœchia acinus, Modiolopsis.
subrotundus (a)—Allonychia, Archinaçella, Astylospongia, Chætetes, Ctenobolbina, Ctenodonta, Cytherella, Eccyliomphalus, Hindia sphæroidalis, Holocystites, Maclurea, Maclurina, Microspongia, Schmidtella, Tellinomya, Vanuxemia, Zittelella typicalis.
subrugosa—Avicula, Pterinea.
subspatulatus (a)—Cypricardites, Lyonsia, Modiolopsis, Palæarca, Prolobella.
subsphericus (a, um)—Cyathophycus, Sphærodictya, Teganium.
subsulcatus (a, um)—Spirifer (Delthyris), Streptorhynchus, Whitfieldella.
subtenta (um)—Hemipronites, Leptæna, Streptorhynchus, Strophomena, Strophomena planumbona, Strophomena rugosa.
subtenuis — Didymograptus, Graptolithus, Leptograptus.
subtilistriata—Liospira, Pleurotomaria, Raphistoma.
subtransversa—Prosserella, Reticularia.
subtrigona—Ctenodonta, Nucula.
subtrigonalis—Atrypa, Eichwaldia, Hemithiris, Rhynchonella, Rhynchotrema inæquivalvis.
subtruncatus (a)—Cypricardia, Cypricardites, Cyrtodonta, Edmondia, Lyonsia, Modiolopsis, Orbicula, Pholidops, Whitella.
subtubulatus (a)—Heliolites, Heliolites nucella.
subturbinatus (a, um)—Cyrtoceras, Ischadites, Omphyma, Receptaculites,
subulata—Hormotoma, Holopella, Loxonema.

subundata—Ambonychia, Clionychia. Posidonomya.
subvada—Zaphrentis.
subvesicularis—Zaphrentis.
succulens—Buthotrephis, Licrophycus.
succulentus—Dendrograptus.
succulosa—Buthotrephis.
sulcatinus (a)—Bellerophon, Bucania.
sulcatus (a, um)—Atrypa, Beatricea, Coscinopora, Cyclonema, Delthyris, Euomphalus, Fusispira, Glycerites, Hemipronites, Leperditella, Leperditia, Leptæna, Merista, Modiolopsis, Palæocrinus, Poleumita, Polytropis, Productus, Ptilodictya, Spirifer, Streptorhynchus, Streptotrochus, Strophomena, Trichophycus, Walcottia, Whitfieldella.
sulcifer—Productus.
sulcocarinata—Protozeuga.
sulcodorsata—Cuneamya, Saffordia.
sumnerensis—Lophospira, Murchisonia.
superbus (a, um)—Actinomya, Ambonychia, Amplexopora, Batostoma, Bathyurus, Cleionychia, Ecculiomphalus, Eccyliomphalus, Lyellia, Metoptoma, Modiolopsis, Phænopora, Ptilodictya, Scenella, Trematopora, Whiteavesia.
superectes—Didymograptus.
supracingulata—Eotomaria, Pleurotomaria.
supraplana—Holopea.
supremus—Tentaculites.
surcularis—Cœnograptus, Graptolithus gracilis, Nemagraptus gracilis, Stephanograptus.
surgens—Cyrtoceras.
susae—Asaphus, Isotelus, Onchometopus.
sussexensis—Beyrichia, Klœdenia.
sutherlandi—Columnaria.
swallowensis—Spirifer (Delthyris).
swanana—Ambonychia.
swartzi—Nucleospira.
sweeneyi—Dinorthis, Orthis, Orthis (Dinorthis) pectinella.
swezeyi—Scævogyra.
swindernana—Thecia.
sybillina—Pleurotomaria.
sylpha—Maclurea, Maclurites, Murchisonia.
symmetra—Ptilodictya.
symmetricus (a)—Beyrichia, Bollia, Drepanella, Eurychilina, Holopea, Klœdenella, Leperditia, Turbo, Whiteavesia.
syphax—Cyrtoceras, Eremoceras.
tæniola—Lingula.
talacastrensis—Strophomena.
tantulus—Fenestella, Polypora.
taraxacum—Tetragraptus.
tarijense—Dictyonema murrayi.
tarquinius—Ceraurus, Cheirurus.
taurifrons—Bathyurus.
taurus—Illænus.
tecumseth (i)—Apiocystites, Brockocystis.
tegulum—Conocardium.
telleri—Dicranopeltis, Harpes.
tenax—Gomphocystis, Gomphocystite
Triplecia (Cliftonia).
tenellus (a, um)—Atactopora, Atactoporella, Ceratopora, Cypricardites, Cyrt
donta, Dictyonema, Ptilodictya, Sy
ringopora.
tener (a)—Dendrocrinus, Matheria, O
thoceras, Hormotoma, Plectambonite
Ptilodictya.
tennesseeæ—Actinocrinites, Cyathocri
nites, Cyathocrinus, Eucalyptocrinite
Eucalyptocrinus, Limaria, Symbatho
rinites, Smybathocrinus.
tennesseensis (e)—Calceola, Centrocri
nus, Corynotrypa, Cyclonema, Cyst
crinus, Helicotoma, Hormotoma s
teri, Idiocrinus, Lampterocrinus, Lec
nocrinus, Marsipocrinus, Marsupiocri
nus, Merista, Ormocrinus, Periechocri
nus, Platycrinus, Platycrinus (Cupel
lacrinus), Plectambonites, Rhizophyl
lum, Rhynchonella, Saccocrinus, Ste
phanocrinus, Strophostylus, Symba
thocrinites, Symbathocrinus, Turbo,
Uncinulus.
tennesseus—Cyathocrinus.
tentaculatus—Graptolithus, Reteograptus, Retiograptus.
tenuibrachiatus—Pycnosaccus.
tenuiceps—Fenestella, Semicoscinium.
tenuicosta—Pentamerus nysius.
tenuicostatus (m)—Conchidium, Pentamerus, Pentamerus nysius.
tenuidens—Orthis.
tenuifiliata—Actinostroma, Stromatopora.
tenuifilum—Actinoceras, Hormoceras, Orthoceras, Orthoceras (Ormoceras).
tenuilamellatus (a)—Avicula, Aviculopecten, Discina, Orbicula, Orbiculoidea (Schizotreta), Schizotreta.

tenuilineata (um)—Dawsonoceras, Leptæna, Rhipidomella, Strophomena.
tenuiliratum—Platyceras.
tenuimurale—Batostoma, Hemiphragma.
tenuiradiatus—Actinocrinus, Palæocystites.
tenuiramosus—Dendrograptus, Desmograptus, Mastigograptus.
tenuis (e)—Arthronema, Arthrostylus, Buthotrephis, Bythotrephis, Dicellograptus, Didymograptus, Diorychopora, Fenestella, Graptolithus, Heliolites, Helopora, Heterocrinus, Leptograptus, Orthothetes, Protarea, Protoscolex, Schuchertella, Stenocrinus, Streptorhynchus, Strophomena.
tenuisculpta—Calvinella.
tenuiseptum—Cameroceras, Cyrtoceras, Orthoceras.
tenuisiphonatum—Orthoceras.
tenuissimus (a)—Actinostroma, Nemapodia, Protowarthia, Ptilograptus, Sinuites, Stomatopora, Stomatopora delicatula.
tenuistriatus (a, um)—Ambonychia, Amygdalocystites, Byssonchia, Chonetes, Cornulites, Cyrtoceras, Dawsonia, Discina, Endoceras proteiforme, Leptæna, Lophospira, Orbiculoidea, Orthoceras, Orthodesma, Psiloconcha, Spirifer, Strophomena, Strophonella, Tentaculites.
tenuitextum — Endoceras proteiforme, Orthoceras.
terebralis—Cœlocaulus, Murchisonia.
terebriformis — Fusispira, Hormotoma, Subulites.
teres—Constellaria, Ptilodictya.
teretiformis (e)—Cycloceras, Hormotoma, Murchisonia, Murchisonia bellicincta, Orthoceras.
teretiusculus—Diplograptus.
tersus (a)—Dalmanella, Orthis.
tessellatus—Campanulites, Cleiocrinus, Cryptolithus, Ischadites, Receptaculites, Trinucleus.
testudinaria—Dalmanella, Orthis.
testudineus—Dolichopterus.
tetracanthura—Protopeltura.
tetragonocephalus—Asaphus, Paradoxides.
tetragonum—Cyathophyllum.
tetranema—Protospongia.
teucer—Oncoceras.
textilis (e)—Cyclonema, Holopea, Murchisonia, Orthoceras, Schizolopha, Stropheodonta, Stropheodonta (Leptostrophia), Strophostylus.
thales—Oncoceras.
thalia—Cyclonema, Pleurotomaria, Strophomena.
thallosus—Inocaulis.
thebesensis—Clorinda, Lophospira, Lyellia, Pterinea, Rhynchotreta.
thisbe—Pterinea.
thomii — Columnaria (Palæophyllum), Cyathophylloides.
thompsoni—Cyrtoceras.
thoroldensis (e)—Alveolites, Cyathophyllum.
thresheri—Encrinurus.
thureaui—Dichograptus, Didymograptus, Goniograptus, Graptolites.
timidus—Lasiograptus bimucronatus.
timon—Bathyurus.
tityrus—Orthoceras.
tonolowayensis—Anoplotheca concava.
tornquisti—Cœlospira concava, Didymograptus.
tortilis—Cyrtospira, Subulites.
tortuosum—Palæophycus.
tortus—Dicellograptus sextans.
townsendii—Ascoceras, Pleurotomaria.
tranceps—Cyrtodonta, Endodesma.
transiens—Goniophora.
transitionis—Maclurea, Maclurites.
transversalis—Anomites, Bumastus, Illænus, Leptæna, Palæopecten, Plectambonites, Strophomena.
transversus (a, um)—Conularia, Cyclonema, Encrinus, Orthoceras, Pterotheca.
trapezoidalis—Cyrtia, Spirifer.
trentonensis (e) — Acidaspis, Actinostroma, Amphilichas, Aparchites minutissimus, Archinacella, Asaphus, Aulopora, Brongniartia, Bumastus, Cameroceras, Ceratocephala, Ceraurinus, Ceraurus, Chasmatopora, Christiania, Cnemidium, Cœloclema, Conularia, Crania, Cryptonymus, Cyphaspis, Cyrtoceras, Cyrtolites, Dekayella, Dekayia, Diamesopora, Dicranopora, Diploclema, Ecculiomphalus, Eccyliomphalus, Encrinurus, Endodesma, Eridotrypa, Glossina, Homalonotus, Hormotoma, Illænus, Iocrinus, Leptograptus flaccidus, Leptograptus flaccidus spinifer, Lichas,

trentonensis—continued.
Lingula, Lyonsia, Metoptoma, Modiolopsis, Monotrypella, Monticulipora (Heterotrypa), Odontopleura, Oncoceras, Orthoceras, Orthoceratites, Palæoglossa, Pholidops, Phylloporina, Platymetopus, Platynotus, Plectorthis plicatella, Primicorallina, Prolobella, Protowarthia cancellata, Pseudosphærexochus, Pterinea, Retepora, Rhinidictya, Romingeria, Sabellarites, Sinuites cancellata, Spirifer, Strophomena, Subretepora, Tryblidium, Zittelella.
trescotti—Pterinea (Tolmaia).
triangularis—Conradella, Cypricardites, Lumbriconereites, Phragmolites.
triangulatus (a)—Asaphus, Conularia, Eusarcus, Grammysia, Orthonota.
triangulus—Ecculiomphalus, Eccyliomphalus, Eccyliopterus.
triarthrus—Paradoxides.
tribulis—Atrypa, Dicellocephalus, Dikelocephalus.
tricarinatus (a)—Hormotoma, Lophospira, Murchisonia, Pleurotrochus, Trochonema, Straparollus.
tricenaria—Orthis, Platystrophia.
trichomanes—Strophograptus.
tricornis—Cryptograptus, Cryptograptus (Idiograptus), Diplograptus,
tridactylus—Ichnophycus.
tridens—Dawsonia.
tridentatus—Climacograptus bicornis.
tridigitatum—Dactylophycus.
trifidus—Asaphoidichnus, Diplograptus, Diplograptus foliaceus, Leptograptus flaccidus spinifer.
trifurcatum—Anisophyllum.
trigonostoma—Diaphorostoma, Platyostoma, Platyostoma niagarensis, Trematonotus, Bucania, Xenophora.
trilineata—Eunema, Pleurotomaria.
triliratus—Euomphalus.
triloba—Ceramoporella, Illænoides.
trilobatus (a, um)—Bellerophon, Bucanella, Bucania, Bucaniella, Conchidium, Leptæna, Planorbis, Streptelasma latusculum, Streptelasma rusticum, Strophomena.
trilobioides—Cancer.
trinucleus—Orthis.
tripectinatus—Callocystites.
tripla—Bucania.
triplesiana—Stricklandinia.
triplicata—Beyrichia lata, Halliella.
triplicatella—Orthis, Orthis plicatella, Plectorthis, Plectorthis fissicosta, Plectorthis plicatella.
triquetra—Avicula.
trisectus—Agnostus.
triserialis—Pachydictya.
trisinuatus (a)—Athyris, Meristina, Pentamerus.
trisulcatus (a)—Beyrichia, Calymene, Klœdenella, Phacops.
triton—Piloceras.
tritonia—Helicotoma, Orthis.
trochiscus — Euomphalus, Polygyrata, Raphistoma.
trochonemoides—Lophospira.
trombetana—Pholidops.
trombetensis—Tentaculites.
troosti—Bellerophon, Chasmops, Columnaria, Dalmanites, Favosites, Pterygometopus, Symbathocrinus.
tropidophora—Murchisonia, Pleurotomaria, Pleurotomaria (Scalites).
truncatula—Cuneamya.
truncatus (a)—Bolbocephalus, Discinia, Eurymya, Ischyrodonta, Modiolodon, Modiolopsis, Orbicula, Orbiculoidea, Whitella.
trusitum—Orthoceras, Protokionoceras.
tuber—Bellerophon.
tuberculatus (a)—Arges, Bathyurus, Beyrichia, Brachiospongia, Carabocrinus, Chætetes, Climacograptus bicornis, Corydocephalus, Eucalyptocrinus, Homotrypa, Hystricurus, Lichenocrinus, Monticulipora, Monticulipora (Monotrypa), Spatiopora.
tuberculosus (a)—Encrinurus, Fistulipora, Rhinopora, Trematopora.
tuberoides—Favosites.
tuberosus (a)—Pattersonia, Scolithus, Strobilospongia.
tubularis (e)—Cyathodictya, Cyathophycus, Palæophycus, Stromatopora.
tubulistriata—Atrypa.
tubulosa (um)—Ceramoporella, Diamesopora, Phytopsis, Rhinopora, Trematopora.
tumidifrons—Illænus.
tumidosus—Agnostus.
tumidula—Athyris, Leperditia, Primitia.

tumidus (a, um)—Astylospongia, Beyrichia, Ctenobolbina, Holocystites, Hybocrinus, Leperditella, Leperditia, Meristella, Oncoceras, Pasceolus, Remopleurides, Stribalocystites.

tumifrons—Beyrichia.

tumulosa—Proboscina.

tunicatus—Calceocrinus, Deltacrinus.

turbidum—Orthoceras.

turbinatus (a, um)—Chætetes, Cyathocrinus, Cyathophyllum, Eucalyptocrinus, Holocystites, Huronia, Monotrypa, Monticulipora, Polydilasma, Trochoceras, Zaphrentis, Zittelella typicalis.

turgida—Athyris, Corynotrypa, Holopea, Klœdenella, Leperditia, Pachydictya, Pleurotomaria, Ribeiria, Sinuopea, Stomatopora.

turgidonummulatum—Orthoceras (Actinoceras).

turpis—Terebratula.

turricula—Murchisonia.

turritiformis—Cœlocaulus.

typicalis — Atactoporella, Atactoporella præcipta, Chænodomus, Climacograptus, Cymatonota, Discophycus, Schizambon, Zittelella.

typicus (a)—Climacograptus, Cyrtocerina, Cystostylus, Eopteria, Palæacmæa.

typus (a)—Allocrinus, Ampheristocrinus, Bollia, Calceocrinus, Camarium, Deltacrinus, Dilobella, Glyptocrinus, Hyptiocrinus, Lichenaria, Merista, Merocrinus, Ottawacrinus, Phyllograpsus, Phyllograptus, Phyllograptus folium, Tanaocrinus, Thamnograptus.

tyrans—Nautilus, Plectoceras.

tyronensis—Dermatostroma, Orthoceras.

tyrrelli (i)—Aparchites, Euomphalopterus, Poterioceras.

uberis—Orthis, Rhipidomella.

ulrich(i)ana—Gerasaphes, Isochilina gregaria.

ulrichi (i)—Amphicoelia, Asaphus, Climacograptus, Craniella, Cyrtograptus, Dekayella, Dekayia, Dinorthis, Dinorthis (Plæsiomys), Elpe, Hemitrypa, Heterotrypa, Loculipora, Macronotella, Monticulipora, Pattersonia, Petrocrania, Primitia, Primitiella, Ptychopyge, Rafinesquina, Rhombopteria (Newsomella), Seelya (Plethospira), Trigyra, Triplecia, Urasterella.

umbellifera—Aulopora, Quenstedtia, Romingeria.

umbilicata (um)—Helicotoma, Pleurotomaria, Trochonema.

umbonata—Athyris, Hindella, Meristella, Plethocardia, Schmidtella, Trematis, Vanuxemia, Whitella.

umbrosus—Periechocrinus, Saccocrinus.

undatus (a, um)—Ambonychia, Avicula, Cleionychia, Clionychia, Cryptoceras, Eurystomites, Inachus, Lituites, Plectoceras, Pterinea, Trocholites, Whiteavesia.

undosus (a, um)—Alveolites, Avicula, Endodesma, Trachyum.

unduavi—Cruziana.

undulatus (a, um)—Ambonychia, Beatricea, Callopora, Chætetes, Chonetes, Clioderma, Cyathophyllum, Dawsonoceras, Dictyostroma, Ecculiomphalus, Eccyliomphalus, Hallopora, Leptodomus, Monotrypa, Monticulipora, Orthoceras, Pterotheca, Raphistomina, Strophomena.

undulosa—Strophomena.

undulostriatus (a, um)—Cypricardinia, Cyrtodonta, Modiolopsis, Olenus, Orthoceras.

unguiformis (e)—Conchidium, Gypidula, Platyceras, Stenotheca, Triblidium, Vallatotheca.

ungulata—Cypricardites, Cyrtodonta, Vanuxemia.

unguloidea—Bollia.

uniangulatus (a)—Euomphalus, Helicotoma, Lophospira, Murchisonia, Ophileta, Straparollus.

unicornis—Aparchites, Leperditia, Primitia, Primitiella.

unicosta—Cliopteria.

unicostata—Leptæna, Platystrophia, Rafinesquina, Strophomena.

unicus (a)—Strombodes, Zaphrentis.

uniformis (e)—Amplexus, Monticulipora, Peronopora.

unilamellosus—Prosserella, Reticularia.

unilargum—Anisophyllum.

unilateralis—Dendrograptus.

unionensis—Orthoceras, Platystrophia.

unionoides—Anodontopsis, Ischyrodonta, Modiolopsis.

uniplicatus (a)—Gypidula, Pentamerus, Sieberella.

unisulcatus—Crepicephalus (Loganellus), Ptychoparia.
uphami—Catazyga, Primitia, Zygospira.
urceolus—Demirastrites, Monograptus, Rastrites.
urniformis—Periechocrinus, Saccocrinus.
uticus—Trocholithus.
uva—Romingeria.
vacua—Columnaria.
vadum—Chonophyllum.
vagabunda—Clintonella.
vagans—Licrophycus, Streptelasma.
vagrans—Barrandeoceras, Eccyliopterus, Gyroceras (Lituites), Helicotoma, Pleurotomaria, Trochonema.
vagum—Orthoceras.
valcourensis—Cybele.
valerius (a)—Euomphalopteris, Euomphalopterus, Pleurotomaria.
validus (a, um)—Agnostus pisiformis, Archinacella, Bathyurellus, Modiolopsis, Tryblidium.
vallandighami—Cyrtoceras.
valvatiformis—Straparollus
vanclevii—Aulopora, Stictopora.
vancortlandti—Carabocrinus.
vanhorn(e)i—Acidaspis, Crotalocrinus, Cyathocrinus, Lingula.
vaningeni—Deltoceras, Eusarcus.
vannulus (a)—Encrinurus, Romingeria.
vanuxemi—Diploceras, Discina, Hyolithes, Endoceras, Spirifer (Delthyris).
varia—Chilotrypa, Constellaria, Diamesopora, Phyllodictya, Trematopora.
variabilis (e)—Batostoma, Glassia, Matthevia, Ptilodictya.
varians—Batostoma, Camarella, Chætetes, Cyclonema, Eospongia, Eunicites, Gnorimocrinus, Lophospira, Monticulipora, Murchisonia, Nereidavus, Zittelella.
varicosa (um)—Cyclonema, Cyclonema bilex, Murchisonia, Pleurotomaria.
variolaris (e)—Clathrodictyon, Stromatopora.
variolata—Chilotrypa, Phyllopora, Phylloporina, Subretopora, Trematopora.
variolosa—Cystiphorolites, Vesicularia.
varipora (um)—Helopora, Lioclema.
varistriata—Pterinea, Stropheodonta, Strophodonta, Strophomena.
varium—Batostoma.
varro—Orthoceras.
vasculosa—Stropheodonta.
vasiforme—Oncoceras.
vassarina—Cyrtoceras.
vaticinus—Euomphalus.
vaupeli—Diamesopora, Heterocrinus, Heterotrypa, Monticulipora, Nicholsonella, Ohiocrinus.
vegetabilis—Inocaulis.
velaris—Euomphalopterus.
velox—Cameroceras, Orthoceras.
venillia—Metoptoma, Scenella.
vennori—Diphyphyllum, Eridophyllum.
venosus (a, um)—Gladiolites, Graptolites, Retiolites, Retiolites geinitzianus, Rhinopora, Rhopalonaria, Ropalonaria, Trichophycus.
ventralis—Cypricardites, Leperditia, Salfordia.
ventricornis—Leperditella sulcata.
ventricosus (a, um)—Barrandella, Bodmania, Cardimorpha, Clorinda, Cyclonema, Cypricardites, Cyrtoceras, Cyrtospria, Edmondia, Fusispira, Fusispira inflata, Gazacrinus, Holocystites, Holopea, Idiocrinus, Klœdenia notata, Lophospira, Murchisonia, Nucleospira, Omospira, Palæarca, Pentamerus, Pentamerus (Pentamerella), Phragmoceras, Pleurotomaria, Ribeiria, Seelya, Spirifer, Stropheodonta, Strophostylus, Subulites, Tellinomya, Turbo, Whitella.
ventrilabiata—Schmidtella crassimarginata.
ventrosa—Eurychilina, Klœdenella turgida.
venustus (a, um)—Astrocerium, Beyrichia, Calamopora, Chætetes, Crepipora, Favosites, Monticulipora (Fistulipora), Orthonota, Pterinotella.
vera—Byssonychia, Peronopora.
verneuili (i)—Actinocrinites, Anastrophia, Calamopora, Calymene, Cupellacrinites, Euomphalus, Marsipocrinus, Melocrinus, Orthisina, Protarea, Turbinicrinites.
verrucosus (a, um)—Astylomanon, Dalmania, Dalmanites, Monticulipora, Omphyma, Palæomanon, Rhinopora.
versaillesensis—Hyolithes, Lingula procteri, Modiolopsis, Platystrophia cypha.
versutus (m)—Litoceras, Nautilus.
vertebralis (e)—Huronia, Orthoceras.
vertebratum—Actinoceras, Ormoceras, Orthoceras.

verticalis—Fucoides, Helicotoma, Scolithus.

verticillata—Cladopora, Cœnites, Limaria, Syringopora.

vesiculosa (um)—Berenicea, Clathrodictyon, Cyathophyllum, Stromatopora.

vesperalis—Diabolocrinus, Rhodocrinus.

vespertillo—Orthis.

vespertinus—Diplograptus foliaceus.

vesta—Hormotoma, Murchisonia.

veterator—Orthoceras.

vetulus (m)—Bathyurus, Platyceras.

vetustus (a) — Agelacrinus, Asaphus, Astræopora, Basilicus, Cardiomorpha, Chonetes, Cuneamya, Cypricardites, Heliolites, Ogygia, Porites, Protaræa, Streptorhynchus, Strophomena, Thecia.

vevayensis—Eridotrypa.

vicinus (a, um)—Camarotœchia, Cyathophyllum, Cypricardites, Eotomaria, Rhynchonella, Strophomena.

vigilans—Asaphus (Isotelus), Ceraurus, Cryptonymus, Cybele, Dalmania, Dalmanites, Dalmanites (Odontochile), Dalmanites (Synphoria), Encrinurus, Nileus, Vogdesia.

vindex—Illænus, Thaleops.

viola—Pleurotomaria, Poleumita.

virgatus (m)—Colpoceras, Endoceras, Orthoceras, Planolites.

virginianus (a)—Eurystomites.

virginiensis—Protaxocrinus.

virgo—Pleurotomaria.

virgulatum—Orthoceras, Orthoceras (Euorthoceras).

virguncula—Pleurotomaria.

viromundo—Bucaniella trilobata.

vitellia—Cœlocaulus, Cœlidium.

vitruvia—Liospira, Pleurotomaria.

vittata—Fusispira, Loxonema, Murchisonia.

vogdesi—Calymene, Calymene blumenbachii.

volans—Pterinea.

volborthi—Camarella.

volutatus — Ecculiomphalus, Eccyliopterus.

volutus (a)—Bellerophon, Holopea.

vorticellatus (a)—Agelacrinites, Agelacrinus, Streptaster.

vulcanius—Chonophyllum (Craterophyllum), Ptychophyllum.

vulcanus (a) — Actinostroma, Pseudosphærexochus.

vulgaris—Hebertella, Planolites.

vulgatus (m)—Diplograptus, Orthoceras.

wabashensis (e)—Anodontopsis, Gomphoceras, Streptomytilus.

wahlenbergii—Cyathophyllum.

walcotti — Azygograptus, Cheirocrinus, Chirocrinus, Cyathophycus, Dictyophytra, Leptobolus, Trocholitoceras.

waldronensis (e)—Actinocrinus, Allonema, Beyrichia, Chonetes novascotia, Cyathocrinus, Dimerocrinus, Entomis, Favosites forbesi, Macrostylocrinus, Mimulus, Spirifera, Streptis, Trochoceras.

walkerensis—Byssonychia.

walkeri — Acanthograptus, Caunopora, Diplotrypa, Inocaulis, Protarea.

wallowayi—Platystrophia.

wallpackensis—Klœdenia.

warrenensis—Agelacrinites, Agelacrinus.

warreni—Mariacrinus.

waukoma—Cyathocrinus, Lecanocrinus.

wauwatosense—Orthoceras.

waynensis (e)—Enterolasma, Enterolasma (Petraia), Petraia, Streptelasma.

waynesboroensis—Lingula.

websteri—Dictyonema.

welchi—Avicula, Megalograptus, Monticulipora (Monotrypa).

welchi—Ptilodictya.

welleri—Pycnosaccus.

wemplei—Dalmanella, Dalmanella (Orthis).

wenti—Chirospongia.

werthneri—Dalmanites.

wesenbergensis—Corydocephalus, Lichas (Arges).

westoni—Amphion, Diplotrypa, Monticulipora, Orthoceras, Pliomerops.

wetherbyi — Belemnocystites, Holocystites, Mitrocrinus, Monticulipora, Orbignyella.

wetherilli—Asaphus.

whiteavesi (i)—Actinostroma, Aparchites, Hormotoma, Isochilina, Leperditia, Lindstroemia, Litoceras, Mesotrypa, Monticulipora, Monticulipora (Diplotrypa), Oncoceras, Ptilodictya.

whiteavesiana—Helicotoma, Protaster.

whitehallensis—Conocephalites.

whitei (ii)—Actinoceras, Camarotoechia, Camarotoechia (Stegerhynchus), Ceramopora, Ceramoporella, Ormoceras, Rhynchonella.

whitfieldi—Actinocrinus, Actinocrinus (Saccocrinus), Amplexus, Austinella, Avicula, Batostoma (Hemiphragma), Diplograpsus, Diplograptus, Graptolithus, Hemiphragma, Hindella, (Greenfieldia), Isoteloides, Lingula, Lingulops, Monticulipora, Monticulipora (Chætetes), Orthis, Periechocrinus, Plectorthis, Primitia, Primitiella, Protocycloceras, Ptilodictya, Trematopora.

whitianus (a)—Dicranograptus nicholsoni, Graptolithus, Rhynchonella.

whitneyi—Cyrtoceras, Phragmoceras.

wichitaensis—Eoorthis, Orthis (Plectorthis).

wilberanus—Mesopalæaster, Palæaster, Petraster.

wilkinsi—Conularia.

williamsi—Strophonella.

wilmingtonensis (e)—Cyphotrypa, Leioclema, Lioclema, Monticulipora, Phænopora, Strombodes mamillare.

wilsoni—Climactichnites, Palæaster, Polygonathus, Promopalæaster, Rhynchonella, Stromatopora, Terebratula, Wilsonia.

winchelli—Amplexopora, Batostoma, Batostoma nodosa, Batostoma spinulosum, Cybele, Cybeloides, Cypricardites, Cyrtodonta, Holocystites, Ischyrinia, Modiolodon, Monticulipora, Monticulipora (Heterotrypa), Piloceras, Strophomena.

winchelli—Continued.

winchesterensis—Rafinesquina.

wingi—Cryptozoon.

winiskensis—Camarotœchia.

winnipegensis (e)—Aulocopella, Hormotoma, Loxonema, Murchisonia, Orthoceras.

winonensis—Euomphalus.

winonicum—Cyrtoceras.

wisconsinensis—Asaphus, Bellerophon, Cyathaxonia, Lindstrœmia, Lophospira, Lophospira helicteres, Platyceras, Strophomena, Tetranota.

wittenbergensis—Melocrinus.

woodae—Tetragraptus.

woodworthi—Orthoceras.

worthenanus (a)—Illænus (Bumastus), Mourlonia, Murchisonia.

wortheni—Cypricardites, Eucalyptocrinus, Homotrypa, Monticulipora, Monticulipora (Monotrypa), Piloceras, Vanuxemia.

wrightii—Caryocaris.

wykoffensis—Cyrtospira, Subulites.

wykoffi—Holocystites, Palæaster, Promopalæaster.

xanthippe—Lophospira, Murchisonia.

xerxes—Orthoceras.

xiphias—Orthoceras, Tripteroceras, Triptoceras.

yoldiaformis—Nuculites, Technophorus.

youngi—Cyrtolites, Orthoceras (Actinoceras).

zenkeri—Conocephalites, Ptychoparia.

zitteli—Anomoclonella.

BIOLOGICAL CLASSIFICATION OF GENERA.

The following biological classification is introduced for the sake of convenience to aid in quickly classifying any of the genera considered in the Bibliographic List. Like the latter it includes only American Ordovician and Silurian genera.

ANIMAL KINGDOM.

Phyllum PORIFERA.

Class SPONGIÆ.

Subclass SILICISPONGIÆ.

Order TETRACTINELLIDA.

Family ASTYLOSPONGIDÆ Rauff.

Astylospongia Roemer, Caryospongia Rauff, Caryomanon Rauff, Carpospongia Rauff, **Cyathospongia Hall,** Carpomanon Rauff, Palæomanon Rauff.

Family HINDIIDÆ Rauff.

Hindia Duncan.

Family ANOMOCLONELLIDÆ Rauff.

Anomoclonella Rauff, Pycnopegma Rauff.

Family CHIASTOCLONELLIDÆ Rauff.

Chiastoclonella Rauff.

Family AULOCOPIDÆ Rauff.

Aulocopella Rauff, Aulocopium Oswald, Dendroclonella Rauff.

Family ARCHÆOSCYPH[illegible]Æ Rauff.

Archæoscyphia Hinde.

Family RHIZOMINNIDÆ Zittel.

Nipterella Hinde.

Family ANTHASPIDELLIDÆ Ulrich and Everett.

Anthaspidella Ulrich and Everett, Calathium Billings, Climacospongia Hinde, Edriospongia Ulrich and Everett, Eospongia Billings, Streptosolen Ulrich and Everett, **Streptospongia** Ulrich, ?Trachyum Billings, Zittelella Ulrich and Everett.

Family DYSTACTOSPONGIDÆ Miller.

Dystactospongia Miller, Heterospongia Ulrich, Saccospongia Ulrich, Strotospongia Ulrich and Everett.

Order HEXACTINELLIDA.

Family PROTOSPONGIDÆ Hinde.

?Halichondrites Dawson and Hinde, ?Lasiothrix Dawson and Hinde, Phormosella Hinde, **Protospongia Salter,** Stephanella Hinde.

Family PLECTOSPONGIDÆ Rauff.

Acanthodictya Hinde, Cyathophycus Walcott, Palæosaccus Hinde, Plectoderma Hinde, Teganium Rauff.

Family HYALONEMATIDÆ Schulze.

Pyritonema McCoy.

Family PATTERSONIIDÆ Rauff.

Pattersonia Miller.

Family BRACHIOSPONGIIDÆ Marsh.

Brachiospongia Marsh.

POSITION UNCERTAIN.

Astræospongia Roemer, Astroconia Sollas, Aulocopina Billings, Camarocladia Ulrich, Cylindrocœlia Ulrich, Fungispongia Ringueberg, Graptospongia Ruedemann, Hyalostelia Zittel, Rauffella Ulrich, Rhabdaria Billings, Rhombodictyon Whitfield, Stelliella Hinde, Trichospongia Billings.

SPONGES? (CALCAREOUS ALGÆ ?).

Anomaloides Ulrich, Cerionites Meek and Worthen, Cyclocrinites Eichwald, Ischadites Murchison, Lepidolites Ulrich, Leptopoterion Ulrich, Nidulites Salter, Pasceolus Billings, Receptaculites Roemer.

Phyllum CŒLENTERATA.

Subphyllum CNIDARIA.

Class ANTHOZOA.

Subclass TETRACORALLA.

Family CYATHAXONIDÆ Edwards and Haime.

Duncanella Nicholson, Petraia Munster.

Family PALÆOCYCLIDÆ Dybowski.

Baryphyllum Edwards and Haime, Palæocyclus Edwards and Haime.

Family ZAPHRENTIDÆ Edwards and Haime.

Amplexus Sowerby, Anisophyllum Edwards and Haime, Aphyllostylus Whiteaves, Ditœcholasma Simpson, Enterolasma Simpson, Helenterophyllum Grabau, Heliophrentis Grabau, Laccophyllum Simpson, Lindströmia Nicholson and Thompson, Polyorophe Lindström, Pycnostylus Whiteaves, Streptelasma Hall, Zaphrentis Rafinesque.

Family CYATHOPHYLLIDÆ Edwards and Haime.

Acervularia Schweigger, Blothrophyllum Billings, Boreaster Lambe, Chonophyllum Edwards and Haime, Clisiophyllum Dana, Columnaria Goldfuss, Cyathophyllum Goldfuss, Cylindrohelium Grabau, Cystiphorolites Miller, Diphyphyllum Lonsdale, Eridophyllum Edwards and Haime, Hallia Edwards and Haime, Heliophyllum Hall, Lyopora Nicholson and Etheridge, Lichenaria Winchell and Schuchert, Nyctopora Nicholson, Omphyma Rafinesque, Ptychophyllum Edwards and Haime, Prismatophyllum Simpson, Strombodes Schweigger.

Family CYSTIPHYLLIDÆ Edwards and Haime.

Calceola Lamarck, Cystiphyllum Lonsdale, Cystostylus Whitfield, Goniophyllum Edwards and Haime.

Subclass HEXACORALLA.

Order MADREPORARIA.

Family EUPSAMMIDÆ Edwards and Haime.

Calostylis Lindström.

Subclass ALCYONARIA (OCTOCORALLA).

Family HELIOLITIDÆ Lindström.

Calvinia Savage, **Heliolites** Dana, **Lyellia** Edwards and Haime, **Plasmopora** Edwards and Haime, **Protarea** Edwards and Haime, **Stylaræa** Seeback, **Thecia** Edwards and Haime.

Suborder TABULATA.

Family FAVOSITIDÆ Edwards and Haime.

Alveolites Lamarck, **Calapœcia** Billings, **Cladopora** Hall, **Cœnites** Eichwald, **Dictyostroma** Nicholson, **Favosites** Lamarck, **Michelinia** Dekoninck, **Palæofavosites** Twenhofel, **Parallelopora** Holtedahl, **Platyaxum** (Davis) Foerste, **Striatopora** Hall, **Syringolites** Hinde.

Family AULOPORIDÆ Nicholson.

Aulopora Goldfuss, **Fletcheria** Edwards and Haime, **Romingeria** Nicholson.

Family SYRINGOPORIDÆ Edwards and Haime.

Cannapora Hall, **Ceratopora** Grabau, **Diorychopora** Davis, **Syringopora** Goldfuss, **Vermipora** Hall.

Family HALYSITIDÆ Edwards and Haime.

Halysites Fischer, **Labyrinthites** Lambe.

Family CHÆTETIDÆ Edwards and Haime.

Chætetes Fischer, **Dania** Edwards and Haime, **Tetradium** Dana.

Class HYDROZOA.

Order STROMATOPOROIDEA.

Family ACTINOSTROMIDÆ Nicholson.

Actinodictyon Parks, **Actinostroma** Nicholson and Murie, **Clathrodictyon** Nicholson and Murie, **Stylodictyon** Nicholson.

Family LABECHIIDÆ Nicholson.

Aulocerium Parks, **Dermatostroma** Parks, **Labechia** Edwards and Haime, **Lophiostroma** Nicholson, **Rosenella** Nicholson, **Stromatocerium** Hall.

Family BEATRICEIDÆ Ulrich.

Beatricea Billings, **Cryptophragmus** Raymond.

Family STROMATOPORIDÆ Nicholson.

Stromatopora Goldfuss, **Stromatoporella** Nicholson, **Syringostroma** Nicholson and Murie.

Family IDIOSTROMIDÆ Nicholson.

Hermatostroma Nicholson, **Idiostroma** Winchell.

Class GRAPTOLITOIDEA.

Order DENDROIDEA.

Family DENDROGRAPTIDÆ Roemer.

Acanthograptus Spencer, Cactograptus Ruedemann, Callograptus Hall, Calyptograptus Spencer, Cyclograptus Spencer, Desmograptus Hopkinson, Dendrograptus Hall, Dictyonema Hall, Inocaulis Hall, Mastigograptus Ruedemann, Odontocaulis Lapworth, Palæodictyota Whitfield, Ptilograptus Hall, Rhizograptus Spencer, Thamnograptus Hall.

POSITION UNCERTAIN.

Chaunograptus Hall, Corynoides Nicholson, Protovirgularia McCoy.

Order GRAPTOLOIDEA.

Suborder AXONOLIPA.

Family DICHOGRAPTIDÆ Lapworth.

Azygograptus Nicholson, Bryograptus Lapworth, Clonograptus Hall, Dichograptus Salter, Didymograptus McCoy, Goniograptus McCoy, Loganograptus Hall, Phyllograptus Hall, Staurograptus Emmons, Temnograptus Nicholson, Tetragraptus Salter.

Family LEPTOGRAPTIDÆ Lapworth.

Amphigraptus Lapworth, Leptograptus Lapworth, Nemagraptus Emmons, Pleurograptus Nicholson, Sigmagraptus Ruedemann, Syndyograptus Ruedemann.

Family DICELLOGRAPTIDÆ Lapworth.

Dicellograptus Hopkinson, Dicranograptus Hall.

Suborder AXONOPHORA.

Family DIPLOGRAPTIDÆ Lapworth.

Climacograptus Hall, Cryptograptus Lapworth, Diplograptus McCoy, Glyptograptus Lapworth, Orthograptus Lapworth, Trigonograptus Nicholson.

Family GLOSSOGRAPTIDÆ Lapworth.

Glossograptus Emmons, Lasiograptus Lapworth, Retiograptus Hall.

Family RETIOLITIDÆ Lapworth.

Retiolites Barrande.

Family DIMORPHOGRAPTIDÆ Lapworth.

Dimorphograptus Lapworth.

Family MONOGRAPTIDÆ Lapworth.

Cyrtograptus Carruthers, Monograptus Geinitz, Rastrites Barrande.

POSITION UNCERTAIN.

Dawsonia Nicholson, Strophograptus Ruedemann.

Phyllum VERMES.

Order MISKOA.

Eopolychætus Ruedeman, Eotrophonia Ulrich, Pontobdellopsis Ruedeman, Protoscolex Ulrich.

Order ERRANTIA.

Arabellites Hinde, Eunicites Ehlers, Glycerites Hinde, Lumbriconerites Ehlers, Nereidavus Grinnel, Œnonites Hinde, Staurocephalites Hinde.

Order TUBICOLA.

Conchicolites Nicholson, **Cornulites** Nicholson, **Ortonia** Nicholson, **Serpulites** Murchison, **Spirorbis** Daudin.

WORM BURROWS, etc.

Arenicolites Salter, **Arthrophycus** Hall, **Climactichnites** Logan, **Dædalus** Rouault, **Eugyrichnites** Ami, **Myrianites** MacLeay, **Nemapodia** Emmons, **Nereites** MacLeay, **Planolites** Nicholson, **Protichnites** Owen, **Sabellarites** Dawson, **Særichnites** Billings, **Scolithus** Haldeman, **Walcottia** Miller and Dyer.

"TRAILS."

Asaphoidichnus Miller. (Trail of crustacean possibly.)
Ormathichnus Miller. (Supposed to be trail of gastropod.)
Petalichnus Miller. (Possibly trail of cephalopod.)
Teratichnus Miller. (Possibly cephalopod trail.)
Trachonomatichnus Miller. (Possibly trail of cephalopod.)

Phyllum ECHINODERMATA.

Subphyllum PELMATOZOA.

Class CYSTOIDEA.

Order AMPHORIDEA.

Family ARISTOCYSTIDÆ Neumayr.

Holocystites Hall.

Family ANOMALOCYSTIDÆ Meek.

Anomalocystites Hall, **Ateleocystites** Billings, **Belemnocystites** Miller and Gurley, **Dendrocystites** Barrande.

Family MALOCYSTIDÆ Bather.

Amygdalocystites Billings, **Canadocystis** Jaekel, **Comarocystites** Billings, **Malocystites** Billings, **Platycystis** Miller.

Order RHOMBIFERA.

Family ECHINOSPHÆRITIDÆ Neumayr.

Echinosphærites Wahlenberg, **Palæocystites** Billings.

Family CARYOCRINIDÆ Bernard.

Caryocrinites Say, **Heterocystites** Hall, **Stribalocystis** Miller.

Family CALLOCYSTIDÆ Bernard.

Apiocystites Forbes, **Callocystites** Hall, **Cheirocrinus** Eichwald, **Cœlocystis** Schuchert, **Glyptocystites** Billings, **Hallicystis** Jaekel, **Hybocystites** Wetherby, **Jaekelocystis** Schuchert, **Lepadocystis** Carpenter, **Lepocrinites** Conrad, **Pleurocystites** Billings, **Pseudocrinites** Pearce, **Sphærocystites** Hall, **Tetracystis** Schuchert, **Trimerocystis** Schuchert.

Order DIPLOPORITA.

Family SPHÆRONITIDÆ Neumayr.

Allocystites Miller, **Trematocystis** Jaekel.

Family GOMPHOCYSTIDÆ Bather.

Gomphocystites Hall.

Order APORITA.

Family CRYPTOCRINIDÆ Zittel.

Lysocystites Miller.

Family MACROCYSTELLIDÆ Bather.

Æthocystis Miller.

Family TIARACRINIDÆ Bather.

Zophocrinus Miller.

Order EDRIOASTEROIDEA.

Family AGELACRINIDÆ Hall.

Agelacrinites Vanuxem, Cystaster Hall, Hemicystites Hall, Streptaster Hall.

Family EDRIOASTERIDÆ Bather.

Æsiocystis Miller and Gurley, Edrioaster Billings.

Family STEGANOBLASTIDÆ Bather.

Astrocystites Whiteaves.

POSITION UNCERTAIN.

Crinocystites Hall, Cyclocystoides Billings and Salter, Lichenocrinus Hall.

Class BLASTOIDEA.

Order PROTOBLASTOIDEA.

Family BLASTOIDOCRINIDÆ Bather.

Blastoidocrinus Billings.

Order EUBLASTOIDEA.

Family TROOSTOBLASTIDÆ Etheridge and Carpenter.

Troostocrinus Shumard.

Class CRINOIDEA.

Order CAMERATA.

Family CLEIOCRINIDÆ Springer.

Cleiocrinus Billings.

Family RETEOCRINIDÆ Wachsmuth and Springer.

Reteocrinus Billings.

Family DIMEROCRINIDÆ Bather.

Cyphocrinus Miller, Dimerocrinus Phillips, Gazacrinus Miller, Lampterocrinus Roemer, Ptychocrinus Wachsmuth and Springer, Siphonocrinus Miller.

Family RHODOCRINIDÆ Roemer.

Archæocrinus Wachsmuth and Springer, Deocrinus Hudson, Diabolocrinus Wachsmuth and Springer, Hercocrinus Hudson, Lyriocrinus Hall, Rhaphanocrinus Wachsmuth and Springer, Siderocrinus Troost.

Family MELOCRINIDÆ Zittel.

Allocrinus Wachsmuth and Springer, Cystocrinus Roemer, Glyptocrinus Hall, Macrostylocrinus Hall, Mariacrinus Hall, Melocrinus Goldfuss, Periglyptocrinus Wachsmuth and Springer, Pycnocrinus Miller, Schizocrinus Hall, Scyphocrinus Zenker (Camarocrinus Hall), Stelidiocrinus Angelin.

Family CALYPTOCRINIDÆ Angelin.

Callicrinus Angelin, Chicagocrinus Weller, Eucalyptocrinus Goldfuss.

Family BATOCRINIDÆ Wachsmuth and Springer.

Acacocrinus Wachsmuth and Springer, Barrandeocrinus Angelin, Compsocrinus Miller, Habrocrinus Angelin, Periechocrinus Austin, Saccocrinus Hall, Tanaocrinus Wachsmuth and Springer, Xenocrinus Miller.

Family PLATYCRINIDÆ Roemer.

Coccocrinus Müller, Cordylocrinus Angelin, Marsipocrinus Bather, Platycrinus Miller.

Order FLEXIBILIA.

Suborder SAGENOCRINOIDEA.

Family LECANOCRINIDÆ Springer.

Anisocrinus Angelin, Asaphocrinus Springer, Lecanocrinus Hall, Ormocrinus Springer, Pycnosaccus Angelin.

Family SAGENOCRINIDÆ Springer.

Sagenocrinus Austin, Temnocrinus Springer.

Family ICHTHYOCRINIDÆ Wachsmuth and Springer.

Clidochirus Angelin, Ichthyocrinus Conrad.

Suborder TAXOCRINOIDEA.

Family TAXOCRINIDÆ Bather.

Eutaxocrinus Springer, Gnorimocrinus Wachsmuth and Springer, Protaxocrinus Springer.

Order INADUNATA.

Suborder LARVIFORMIA.

Family STEPHANOCRINIDÆ Wachsmuth and Springer.

Stephanocrinus Conrad.

Family PISOCRINIDÆ Angelin.

Pisocrinus Dekoninck.

Family HAPLOCRINIDÆ Roemer.

Haplocrinus Steininger.

Family SYNBATHOCRINIDÆ Wachsmuth and Springer.

Synbathocrinus Phillips.

Suborder FISTULATA.

Family HYBOCRINIDÆ Zittel.

Hybocrinus Billings, Hybocystis Wetherby.

Family HETEROCRINIDÆ Zittel.

Ectenocrinus Miller, Heterocrinus Hall, Iocrinus Hall, Myelodactylus Hall, Ohiocrinus Wachsmuth and Springer.

Family ANOMALOCRINIDÆ Wachsmuth and Springer.

Anomalocrinus Meek and Worthen, Glaucocrinus Parks.

Family CREMACRINIDÆ Ulrich.

Cremacrinus Ulrich, Deltacrinus Ulrich, Eucheirocrinus Meek and Worthen.

Family DENDROCRINIDÆ Bather.

Cupulocrinus D'Orbigny, Dendrocrinus Hall, Merocrinus Walcott, Ottawacrinus Billings.

Family CROTALOCRINIDÆ Angelin.

Crotalocrinus Austin, Petalocrinus Weller.

Family CYATHOCRINIDÆ Roemer.

Achradocrinus Schultze, Ampheristocrinus Hall, Carabocrinus Billings, Closterocrinus Hall, Cyathocrinus Miller, Euspirocrinus Angelin, Gissocrinus Angelin, Homocrinus Hall, Lasiocrinus Kirk, Palæocrinus Billings, Porocrinus Billings.

Family BOTRYOCRINIDÆ Bather.

Botryocrinus Angelin.

UNCERTAIN PLACE.

Astroporites Lambe (Base of crinoid ?Cliocrinus), Bolboporites Pander, Emperocrinus Miller and Gurley, Indianocrinus Miller and Gurley, Mitrocrinus Miller and Gurley, Pachyocrinus Billings, Podolithus Sardeson, Thalamocrinus Miller and Gurley.

Subphyllum ASTEROZOA.

Class STELLEROIDEA.

Subclass ASTEROIDEA.

Order PHANEROZONIA.

Family HUDSONASTERIDÆ Schuchert.

Hudsonaster Sturtz.

Family PALÆASTERIDÆ Gregory.

Palæaster Hall.

Family PROMOPALÆASTERIDÆ Schuchert.

Anorthaster Schuchert, Mesopalæaster Schuchert, Promopalæaster Schuchert.

Family PALASTERINIDÆ Gregory.

Petraster Billings.

Family STENASTERIDÆ Schuchert.

Stenaster Billings.

Family URASTERELLIDÆ Schuchert.

Urasterella McCoy.

Family SCHUCHERTIIDÆ Schuchert.

Schuchertia Gregory.

Subclass AULUROIDEA.

Order LYSOPHIURÆ.

Family PROTASTERIDÆ Miller.

Alepidaster Meek, Protaster Forbes, Tæniaster Billings.

Family PALÆOPHIURIDÆ Gregory.

Eugasterella Schuchert.

Order STREPTOPHIURÆ.

Family LAPWORTHURIDÆ Gregory.

Squamaster Ringueberg.

Phyllum MOLLUSCOIDEA.

Class BRYOZOA.

Subclass GYMNOLÆMATA.

Order CTENOSTOMATA.

Family RHOPALONARIIDÆ Nickles and Bassler.

Rhopalonaria Ulrich.

Family VINELLIDÆ Ulrich and Bassler.

Allonema Ulrich and Bassler, Heteronema Ulrich and Bassler, Vinella Ulrich.

Family ASCODICTYONIDÆ Ulrich.

Ascodictyon Nicholson and Etheridge.

Order CYCLOSTOMATA.

Suborder TUBULIPORINA.

Family DIASTOPORIDÆ Busk.

Berenicea Lamouroux, Corynotrypa Bassler, Diastoporina Ulrich, Proboscina Audouin, Stomatopora Bronn.

Family IDMONEIDÆ Busk.

Protocrisina Ulrich.

Family ENTALOPHORIDÆ Reuss.

Diploclema Ulrich, Mitoclema Ulrich.

Family PHACELOPORIDÆ Ulrich.

Phacelopora Ulrich.

Suborder CERAMOPORIDEA.

Family CERAMOPORIDÆ Ulrich.

Anolotichia Ulrich, Ceramophylla Ulrich, Ceramopora Hall, Ceramoporella Ulrich, Chiloporella Ulrich, Cœloclema Ulrich, Crepipora Ulrich, Favositella Etheridge and Foord, Scenellopora Ulrich, Spatiopora Ulrich.

Family FISTULIPORIDÆ Ulrich.

Chilotrypa Ulrich, Fistulipora McCoy, Fistuliporella Simpson, Meekopora Ulrich.

Order TREPOSTOMATA.

Suborder AMALGAMATA.

Family MONTICULIPORIDÆ Nicholson.

Aspidopora Ulrich, Atactoporella Ulrich, Homotrypa Ulrich, Homotrypella Ulrich, Mesotrypa Ulrich, Monticulipora D'Orbigny, Orbignyella Ulrich and Bassler, Peronopora Nicholson, Prasopora Nicholson and Etheridge.

Family HETEROTRYPIDÆ Ulrich

Atactopora Ulrich, Cyphotrypa Ulrich and Bassler, Dekayella Ulrich, Dekayia Edwards and Haime, Heterotrypa Nicholson, Leptotrypa Ulrich, Petigopora Ulrich, Stigmatella Ulrich and Bassler.

Family CONSTELLARIIDÆ Ulrich.

Constellaria Dana, Dianulites Eichwald, Idiotrypa Ulrich, Nicholsonella Ulrich, Stellipora Hall.

Family BATOSTOMELLIDÆ Ulrich.

Batostomella Ulrich, Bythopora Miller and Dyer, Diplostenopora Ulrich and Bassler, Eridotrypa Ulrich, Lioclema Ulrich, Lioclemella Foerste, Stenopora Lonsdale.

Suborder INTEGRATA.

Family AMPLEXOPORIDÆ Ulrich.

Amplexopora Ulrich, Discotrypa Ulrich, Monotrypella Ulrich, Rhombotrypa Ulrich and Bassler.

Family HALLOPORIDÆ Bassler.

Calloporella Ulrich, Hallopora Bassler, Halloporina Bassler.

Family TREMATOPORIDÆ Ulrich.

Anaphragma Ulrich and Bassler, Batostoma Ulrich, Diplotrypa Nicholson, Hemiphragma Ulrich, Monotrypa Nicholson, Stromatotrypa Ulrich, Trematopora Hall.

Order CRYPTOSTOMATA.

Family PHYLLOPORINIDÆ Ulrich.

Chasmatopora Eichwald, Pseudohornera Roemer.

Family FENESTELLIDÆ King.

Fenestella Lonsdale, Helicopora Claypole, Hemitrypa Phillips, Loculipora Hall, Polypora McCoy, Ptiloporella Hall, Semicoscinium Prout, Thamniscus King.

Family ARTHROSTYLIDÆ Ulrich.

Arthroclema Billings, Arthrostylus Ulrich, Glauconome Goldfuss, Helopora Hall, Nematopora Ulrich, Sceptropora Ulrich.

Family RHABDOMESONTIDÆ Vine.

Acanthoclema Hall.

Family PTILODICTYONIDÆ Ulrich.

Arthropora Ulrich, Clathropora Hall, Escharopora Hall, Graptodictya Ulrich, Phænopora Hall, Ptilodictya Lonsdale.

Family STICTOPORELLIDÆ Nickles and Bassler.

Ptilotrypa Ulrich, Stictopora Hall, Stictoporella Ulrich, Tæniodictya Ulrich.

Family RHINIDICTYONIDÆ Ulrich.

Dicranopora Ulrich, Eurydictya Ulrich, Goniotrypa Ulrich, Pachydictya Ulrich, Phyllodictya Ulrich, Rhinidictya Ulrich, Trigonodictya Ulrich.

Family RHINOPORIDÆ Ulrich.

Diamesopora Hall, Lichenalia Hall, Rhinopora Hall, Stictotrypa Ulrich.

Order CHEILOSTOMATA.

?Paleschara Hall.

Class BRACHIOPODA.

Order ATREMATA.

Superfamily OBOLACEA.

Family OBOLIDÆ King.

Dicellomus Hall, Elkania Ford, Leptobolus Hall, Lingulella Salter (subgenus Lingulepis Hall), Obolus Eichwald (subgenera, Brœggeria Walcott, Lingulobolus Matthew, Palæobolus Matthew, Westonia Walcott), Paterula Barrande.

Family TRIMERELLIDÆ Davidson and King.

Dinobolus Hall, Monomorella Billings, Rhinobolus Hall, Trimerella Billings.

Superfamily LINGULACEA.

Family LINGULIDÆ Gray.

Lingula Bruguiere (subgenera, Palæoglossa Cockerell, Pseudolingula Mickwitz), Tunaria, Pizarroa and Bistramia Hoek (described as asymmetrical Lingulæ, but probably pelecypods).

Family LINGULASMATIDÆ Winchell and Schuchert.

Lingulasma Ulrich, Lingulops Hall.

Order NEOTREMATA.

Superfamily SIPHONOTRETACEA.

Family SIPHONOTRETIDÆ Kutorga.

Schizambon Walcott, Siphonotreta Verneuil.

Superfamily ACROTRETACEA.

Family ACROTRETIDÆ Schuchert.

Acrothele Linnarsson, Acrotreta Kutorga, Conotreta Walcott, Linnarssonella Walcott.

Superfamily DISCINACEA.

Family TREMATIDÆ Schuchert.

Eunoa Clarke, Schizocrania Hall and Whitfield, Trematis Sharpe.

Family DISCINIDÆ Gray.

Orbiculoidea D'Orbigny, Schizotreta Kutorga.

Superfamily CRANIACEA.

Family CRANIIDÆ King.

Crania Retzius, Petrocrania Raymond, Pholidops Hall.

Order PROTREMATA.

Superfamily ORTHACEA.

Family BILLINGSELLIDÆ Schuchert.

Billingsella Hall and Clarke, Eoorthis Walcott (subgenus Orusia Walcott), Protorthis Hall and Clarke.

Family ORTHIDÆ Woodward.

Dalmanella Hall and Clarke, Hebertella Hall and Clarke (subgenus Eridorthis Foerste), Orthis Dalman, Orthostrophia Hall (subgenus Schizoramma Foerste), Platystrophia King, Plectorthis Hall and Clarke (subgenera Austinella and Encuclodema Foerste).

Family RHIPIDOMELLIDÆ Schuchert.

Bilobites Linnæus, Dinorthis Hall and Clarke (subgenera Plæsiomys Hall and Clarke, Valcourea Raymond, Heterorthis Hall and Clarke, Pianodema Foerste, Rhipidomella Œhlert, Schizophoria King).

Superfamily STROPHOMENACEA.

Family Strophomenidæ King.

Christiania Hall and Clarke, Leptæna Dalman, Leptella Hall and Clarke, Mimulus Barrande, Orthidium Hall and Clarke, Pholidostrophia Hall and Clarke, Plectambonites Pander, Rafinesquina Hall and Clarke, Schuchertella Girty, Streptis Davidson, Stropheodonta Hall (subgenera Brachyprion Shaler, Leptostrophia Hall and Clarke, Strophomena Blainville, Strophonella Hall (subgenus Strophoprion Twenhofel), Triplecia Hall (subgenus Cliftonia Foerste).

Family Productidæ Gray.

Chonetes Fischer.

Superfamily PENTAMERACEA.

Family Syntrophiidæ Schuchert.

Clarkella Walcott, Syntrophia Hall and Clarke.

Family Clitambonitidæ Winchell and Schuchert.

Clitambonites Pander, Polytœchia Hall and Clarke, Scenidium Hall.

Family Porambonitidæ Davidson.

Anastrophia Hall, Camarella Billings, Parastrophia Hall and Clarke, Porambonites Pander.

Family Pentameridæ McCoy.

Capellinia Hall and Clarke, Clorinda Barrande, Conchidium Linnæus, Gypidula Hall (subgenus Sieberella Œhlert), Orthotropia Hall and Clarke, Pentamerella Hall, Pentamerus Sowerby, Platymerella Foerste, Stricklandinia Billings, Virgiana Twenhofel.

Family Eichwaldiidæ Schuchert.

Dictyonella Hall, Eichwaldia Billings.

Order Telotremata.

Superfamily RHYNCHONELLACEA.

Family Protorhynchidæ Schuchert.

Protorhyncha Hall and Clarke.

Family Rhynchonellidæ Gray.

Camarotœchia Hall and Clarke (subgenus Stegerhynchus Foerste), Eatonia Hall, Orthorhynchula Hall and Clarke, Rhynchonella Fischer, Rhynchotrema Hall, Rhynchotreta Hall, Uncinulus Bayle, Wilsonia Kayser.

Superfamily TEREBRATULACEA.

Family Centronellidæ Hall and Clarke.

Centronella Billings, Rensselæria Hall.

Family Protozeugidæ Twenhofel.

Protozeuga Twenhofel.

Superfamily SPIRIFERACEA.

Family Atrypidæ Gill.

Atrypa Dalman, Atrypina Hall and Clarke, Catazyga Hall and Clarke, Clintonella Hall and Clarke, Glassia Davidson, Lissatrypa Twenhofel, Zygospira Hall.

Family Cyclospiridæ Schuchert.

Cyclospira Hall and Clarke.

Family SPIRIFERIDÆ King.

Cyrtia Dalman, Reticularia McCoy (subgenus Prosserella Grabau), Spirifer Sowerby (subgenera Delthyris Dalman, Eospirifer Schuchert).

Family SUESSIDÆ Waagen.

Cyrtina Davidson.

Family RHYNCHOSPIRIDÆ Hall and Clarke.

Homœospira Hall and Clarke, Rhynchospira Hall and Clarke, Trematospira Hall.

Family MERISTELLIDÆ Hall and Clarke.

Hindella Davidson (subgenus Greenfieldia Grabau), Hyattidina Schuchert, Merista Suess, Meristella Hall, Meristina Hall, Meristospira Grabau, Nucleospira Hall, Whitfieldella Hall and Clarke.

Family CŒLOSPIRIDÆ Hall and Clarke.

Anabaia Clarke, Cœlospira Hall.

Family ATHYRIDÆ Phillips.

Athyris McCoy.

Phyllum MOLLUSCA.

Class PELECYPODA.

Order PRIONODESMACEA.

Family SOLENOMYIDÆ Gray.

Clinopistha Meek and Worthen, Solenomya Lamarck.

Family GRAMMYSIIDÆ Fischer.

Cuneamya Hall and Whitfield, Edmondia Dekoninck, Grammysia Verneuil, Leptodomus McCoy, Saffordia Ulrich, Sedgwickia McCoy.

Family CTENODONTIDÆ Dall.

Ctenodonta Salter, Nuculites Conrad, Pyrenomœus Hall.

Family PARARCIDÆ Ulrich.

Panenka Barrande.

Family LEDIDÆ Adams.

Clidophorus Hall, Cytherodon Hall.

Family MEGALODONTIDÆ Zittel.

Megalomus Hall, Plethocardia Ulrich.

Family CYRTODONTIDÆ Ulrich.

Bodmania Miller, Cyrtodonta Billings, Ischyrodonta Ulrich, Matheria Billings, Ortonella Ulrich, Sowteria Whiteaves, Vanuxemia Billings, Whitella Ulrich.

Family AVICULIDÆ D'Orbigny.

Actinopteria Hall, Avicula Klein, Cliopteria Williams, Leptodesma Hall, Limoptera Hall, Leiopteria Hall, Palæopecten Williams, Pterinea Goldfuss, Pteronitella Billings, Ptychopteria Hall, Rhombopteria Jackson, Tolmaia Williams.

Family AMBONYCHIIDÆ Miller.

Allonychia Ulrich, Ambonychia Hall, Amphicœlia Hall, Anomalodonta Miller, Anoptera Ulrich, Byssonychia Ulrich, Clionychia Ulrich, Ectenoptera Ulrich, Eridonychia Ulrich, Mytilarca Hall, Opisthoptera Meek, Paleocardia Hall, Plethomytilus Hall, Psilonychia Ulrich, Streptomytilus Kindle and Breger.

Family Chænocardiidæ Miller.

Megambonia Hall.

Family Conocardiidæ Neumayr.

Conocardium Brown.

Family Lyrodesmidæ Ulrich.

Lyrodesma Conrad.

Family Pectinidæ Lamarck.

Aviculopecten McCoy, ?Palæopteria Whiteaves, Pterinopecten Hall.

Family Modiolopsidæ Fischer.

Aristerella Ulrich, Colpomya Ulrich, Corallidomus Whitfield, Cymatonota Ulrich Endodesma Ulrich, Eurymya Ulrich, Eurymyella Williams, Goniophora Phillip Modiolodon Ulrich, Modiolopsis Hall, Modiomorpha Hall, Orthodesma Hall an Whitfield, Orthonota Conrad, Parallelodus Branson, Prolobella Ulrich, Psiloconch Ulrich, Pyanomya Miller, Sphenolium Miller, Whiteavesia Ulrich.

Order ANOMALODESMACEA.

Family Pholadellidæ Miller.

Physetomya Ulrich, Rhytimya Ulrich.

Order TELEODESMACEA.

Family Cycloconchidæ Ulrich.

Allodesma Ulrich, Anodontopsis McCoy, Cycloconcha Miller.

Family Pleurophoridæ Dall.

Cypricardinia Hall.

Family Lucinidæ Fleming.

Prolucina Dall.

Family Palæanatidæ Miller.

Ilionia Billings.

POSITION UNCERTAIN.

Orthonotella Miller and Faber (Crustacean?).

Class AMPHINEURA.

Order POLYPLACOPHORA.

Family Gryphochitonidæ Dall.

Priscochiton Dall.

Class GASTROPODA.

Order ASPIDOBRANCHIA.

Family Acmeidæ Dall.

Archinacella Ulrich and Scofield, Conchopeltis Walcott, Helcionopsis Ulrich and Scofield, Hypseloconus Berkey, Metoptoma Phillips, Palæacmæa Hall, Scenell Billings.

Family Tryblidiidæ Pilsbury.

Tryblidium Lindström.

Family Cyrtolitidæ Ulrich and Scofield.

Cyrtolites Conrad, Cyrtolitina Ulrich, Microceras Hall, Trigyra Raymond.

Family Sinuitidæ Bassler.

Bucanella Meek, Sinuites Koken.

Family Bucaniidæ Ulrich and Scofield.

Bucania Hall, Kokenospira Bassler, Megalomphala Ulrich, Oxydiscus Koken, Phragmolites Conrad, Salpingostoma Roemer, Tetranota Ulrich and Scofield, Tremanotus Hall.

Family Bellerophontidæ McCoy.

Bellerophon Montfort, Bucanopsis Ulrich.

Family Carinaropsidæ Ulrich and Scofield.

Carinaropsis Hall.

Family Pleurotomariidæ D'Orbigny.

Cataschisma Branson, Clathrospira Ulrich and Scofield, Cœlocaulus Œhlert, Ectomaria Koken, Eotomaria Ulrich, Euconia Ulrich, Hormotoma Salter, Liospira Ulrich and Scofield, Lophospira Whitfield, Loxoplocus Fischer, Mourlonia Dekoninck, Murchisonia D'Archiac and Verneuil, Phanerotrema Fischer, Plethospira Ulrich, Pleurotomaria Sowerby, Schizolopha Ulrich, Seelya Ulrich, Sinuopea Ulrich, Turritoma Ulrich.

Family Euomphalidæ Dekoninck.

Ceratopea Ulrich, Eccyliomphalus Portlock, Eccyliopterus Remele, Euomphalus Sowerby, Helicotoma Salter, Maclurina Ulrich and Scofield, Maclurites Lesueur, Ophileta Vanuxem, Ophiletina Ulrich and Scofield, Pleuronotus Hall, Polygyrata Weller, Straparollina Billings, Straparollus Montfort.

Family Raphistomidæ Ulrich and Scofield.

Euomphalopterus Roemer, Omospira Ulrich, Raphistoma Hall, Raphistomina Ulrich and Scofield, Scalites Emmons.

Family Turbinidæ Adams.

Omphalotrochus Meek.

Family Trochonematidæ Ulrich.

Acanthonema Grabau, Bucanospira Ulrich, Callonema Hall, Codonocheilus Whiteaves, Cyclonema Hall, Cyclora Hall, Dyeria Ulrich, Eunema Salter, Gyronema Ulrich, Holopea Hall, Pleurotrochus Grabau, Poleumita Clarke and Ruedemann, Streptotrochus Perner, Strophostylus Hall, Trochonema Salter.

Order CTENOBRANCHIATA.

Suborder Heteropoda.

Pelagiella Matthew.

Suborder Platypoda.

Family Loxonematidæ Ulrich.

Loxonema Phillips, Meekospira Ulrich.

Family Subulitidæ Miller.

Cyrtospira Ulrich, Fusispira Hall, Subulites Conrad.

Family Capulidæ Cuvier.

Diaphorostoma Fischer, Hercynella Barrande, Orthonychia Hall, Platyceras Conrad, Stenotheca Salter, Vallatotheca Foerste.

UNCERTAIN PLACE.

Clisospira Billings, Matherella Walcott, Omphalopterus Roemer, Palæopupa Foerste, Pycnomphalus Lindström, Scævogyra Whitfield.

Order OPISTHOBRANCHIA.

Suborder PTEROPODA.

Family CAVOLINIIDÆ Fischer.

Coleoprion Sandberger, Styliola Lesueur.

Family HYOLITHIDÆ Nicholson.

Hyolithes Eichwald, Matthevia Walcott, Pterotheca Salter.

Suborder CONULARIIDA.

Family TENTACULITIDÆ Walcott.

Tentaculites Schlotheim.

Family TORELLELLIDÆ Holm.

Coleolus Hall, Hyolithellus Billings, Salterella Billings.

Family CONULARIIDÆ Walcott.

Conularia Miller, Sphenothallus Hall.

Class CEPHALOPODA.

Subclass TETRABRANCHIATA.

Order NAUTILOIDEA.

Family ENDOCERATIDÆ Hyatt.

Cameroceras Conrad, Cyclendoceras Grabau and Shimer, Endoceras Hall, Narthecoceras Hyatt, Nanno Clarke, Suecoceras Holm, Vaginoceras Hyatt.

Family PILOCERATIDÆ Hyatt.

Clarkoceras Ruedemann, ? Cyrtocerina Billings, Piloceras Salter.

Family CYRTENDOCERATIDÆ Hyatt.

Cyrtendoceras Remele.

Family ASCOCERATIDÆ Barrande.

Ascoceras Barrande, Glossoceras Barrande.

Family MESOCERATIDÆ Hyatt.

Billingsites Hyatt.

Family ORTHOCERATIDÆ McCoy.

Baltoceras Holm, Geisonoceras Hyatt, Orthoceras Breynius.

Family CYCLOCERATIDÆ Hyatt.

Cycloceras McCoy, Dawsonoceras Hyatt, Orygoceras Ruedemann, Protocycloceras Hyatt, Spyroceras Hyatt, Kionoceras Hyatt, Protokionoceras Grabau and Shimer.

Family TARPHYCERATIDÆ Hyatt.

Aphetoceras Hyatt, Barrandeoceras Hyatt, Deltoceras Hyatt, Eurystomites Schröder, Tarphyceras Hyatt.

Family TROCHOLITIDÆ Hyatt.

Apsidoceras Hyatt, Discoceras Barrande, Gyroceras Dekoninck, Litoceras Hyatt, Mitroceras Hyatt, Pycnoceras Hyatt, Schrœderoceras Hyatt, Trochoceras Barrande, Trocholites Conrad, Trocholitoceras Hyatt.

Family PLECTOCERATIDÆ Hyatt.

Plectoceras Hyatt, Sphyradoceras Hyatt.

Family LITUITIDÆ Noetling.

Ancistroceras Ball, Cyclolituites Remele, Lituites Breynius, Rhynchorthoceras Remele.

Family HALLOCERATIDÆ Hyatt.

Zitteloceras Hyatt.

Family NAUTILIDÆ Owen.

Nautilus Linnæus.

Family LOXOCERATIDÆ Hyatt.

Loxoceras McCoy.

Family ACTINOCERATIDÆ Saemann.

Actinoceras Brown, Cyrtactinoceras Hyatt, Deiroceras Hyatt, Discosorus Hall, Gonioceras Hall, Huronia Stokes, Paractinoceras Hyatt, Tripteroceras Hyatt.

Family JOVELLANIDÆ Hyatt.

Jovellania Bayle, Tripleuroceras Hyatt.

Family RIZOCERATIDÆ Hyatt.

Cyrtorizoceras Hyatt, Rizoceras Hyatt.

Family OOCERATIDÆ Hyatt.

Cyrtoceras Goldfuss, Ooceras Hyatt.

Family ONCOCERATIDÆ Hyatt.

Cyclostomiceras Hyatt, Eremoceras Hyatt, Meloceras Hyatt, Oncoceras Hall.

Family POTERIOCERATIDÆ Foord.

Clinoceras Mascke, Poterioceras McCoy, Streptoceras Billings.

Family TRIMEROCERATIDÆ Hyatt.

Hexameroceras Hyatt, Pentameroceras Hyatt, Septameroceras Hyatt, Trimeroceras Hyatt.

Family PHRAGMOCERATIDÆ Hyatt.

Gomphoceras Sowerby, Phragmoceras Sowerby, Protophragmoceras Hyatt.

Phyllum ARTHROPODA.

Subphyllum BRANCHIATA.

Class CRUSTACEA.

Subclass TRILOBITA.

Order HYPOPARIA.

Family AGNOSTIDÆ McCoy.

Agnostus Brongniart, Arthrorachis Corda, Lejopyge Corda.

Family SHUMARDIIDÆ Lake.

Shumardia Billings.

Family HARPEDIDÆ Corda.

Eoharpes Raymond, Harpes Goldfuss, Harpides Beyrich.

Family TRINUCLEIDÆ Emmrich.

Cryptolithus Green, Dionide Barrande, Tretaspis McCoy, Trinucleus Murchison.

Family RAPHIOPHORIDÆ Angelin.

Ampyx Dalman (subgenus Lonchodomas Angelin).

Order OPISTHOPARIA.

Family OLENIDÆ Burmeister.

Acantholenus Matthew, Aulacopleura Corda, Conocephalites Zenker, Ctenopyge Linnarsson, Loganellus Devine, Lonchocephalus Owen, Parabolina Salter, Parabolinella Brögger, Parabolinopsis Hoek, Peltura Milne-Edwards, Ptychoparia Corda, Sphærophthalmus Angelin, Triarthrus Green.

Family SOLENOPLEURIDÆ Angelin.

Hystricurus Raymond, Solenopleura Angelin.

Family CERATOPYGIDÆ Raymond.

Ceratopyge Corda.

Family ELLIPSOCEPHALIDÆ Matthew.

Plethopeltis Raymond.

Family REMOPLEURIDÆ Corda.

Remopleurides Portlock.

Family BATHYURIDÆ Walcott.

Bathyurellus Billings, Bathyurus Billings, Bolbocephalus Whitfield, Petigurus Raymond.

Family ASAPHIDÆ Burmeister.

Asaphellus Callaway, Asaphus Brongniart, Basilicus Salter, Brachyaspis Salter, Gerasaphes Clarke, Hemigyraspis Raymond, Holasaphus Matthew, Illænurus Hall, Isoteloides Raymond, Isotelus DeKay, Megalaspis Angelin, Nileus Dalman, Ogygites Tromelin and Lebesconte, Onchometopus Schmidt, Ptychopyge Angelin, Symphysurus Goldfuss, Vogdesia Raymond.

Family ILLÆNIDÆ Corda.

Bumastus Murchison, Illænoides Weller, Illænus Dalman, Thaleops Conrad.

Family DIKELOCEPHALIDÆ Miller.

Apatokephalus Brögger, Calvinella Walcott, Conokephalina Brögger, Dikelocephalus Owen, Platycolpus Raymond, Saukia Walcott.

Family GOLDIIDÆ Raymond.

Goldius Dekoninck.

Family PROETIDÆ Corda.

Cyphaspis Burmeister, Haploconus Raymond, Prœtus Steininger.

Family LICHADIDÆ Corda.

Amphilichas Raymond, Arctinurus Castelnau, Conolichas Dames, Corydocephalus Corda, Dicranopeltis Corda, Lichas Dalman, Metopolichas Gurich.

Family ODONTOPLEURIDÆ Burmeister.

Acidaspis Murchison, Ceratocephala Warder, Glaphurus Raymond, Odontopleuar Emmrich.

Order PROPARIA.

Family ENCRINURIDÆ Angelin.

Cybeloides Slocom, Encrinurus Emmrich.

Family CALYMENIDÆ Milne-Edwards.

Calymene Brongniart, Calymenella Bergeron, Frammia Holtedahl, Homalonotus Koenig, Synhomalonotus Pompeckj, Trimerus Green.

Family CHEIRURIDÆ Salter.

Anacheirurus Reed, Ceraurinus Barton, Ceraurus Green, Cheirurus Beyrich, Deiphon Barrande, Heliomera Raymond, Nieszkowskia Schmidt, Pliomerops Raymond, Pseudosphærexochus Schmidt, Sphærexochus Beyrich, Sphærocoryphe Angelin, Staurocephalus Barrande.

Family PHACOPIDÆ Corda.

Chasmops McCoy, Dalmanites Barrande, Phacopidella Reed, Phacops Emmrich, Pterygometopus Schmidt.

UNPLACED GENERA.

Anomocare Angelin, Anomocarella Walcott, Arionellus Barrande, Clelandia Cossman, Dolichometopus Angelin, Endymionia Billings, Goniurus Raymond, Holometopus Angelin, Hungaia Walcott, Leiostegium Raymond, Lisania Walcott, Levisia Walcott, Leptoplastus Angelin, Lloydia Vogdes, Menocephalus Owen, Pagodia Walcott, Ptychaspis Hall, Telephus Barrande, Thysanopyge Kayser.

Class EUCRUSTACEA.

Superorder BRANCHIOPODA.

Order NOTOSTRACA.

Eopteria Billings, Euchasma Billings, Ischyrinia Billings, Ribeirella Shubert and Waagen, Ribeiria Sharpe, Technophorus Miller.

Superorder OSTRACODA.

Family LEPERDITIIDÆ Jones.

Aparchites Jones, Isochilina Ulrich, Leperditella Ulrich, Leperditia Roualt, Schmidtella Ulrich.

Family BEYRICHIIDÆ Jones.

Aechmina Jones and Holl, Beyrichia McCoy, Bollia Jones and Holl, Ceratopsis Ulrich, Ctenobolbina Ulrich, Dicranella Ulrich, Dilobella Ulrich, Drepanella Ulrich, Eurychilina Ulrich, Halliella Ulrich, Jonesella Ulrich, Klœdenella Ulrich and Bassler, Klœdenia Jones and Holl, Macronotella Ulrich, Mesomphalus Ulrich and Bassler, Moorea Jones and Kirkby, Placentula Jones and Holl, Primitia Jones and Holl, Primitiella Ulrich, Scofieldia Ulrich and Bassler, Strepula Jones and Holl, Tetradella Ulrich, Ulrichia Jones.

Family THLIPSURIDÆ Jones.

Octonaria Jones, Thlipsura Jones and Holl.

Family CYPRIDÆ Zenker.

Bairdia Bosquet, Bythocypris Brady, Cytheropsis McCoy, Krausella Ulrich, Macrocypris Brady, Pontocypris Sars.

Family CYTHERELLIDÆ Sars.

Cytherella Jones, Cytherellina Jones and Holl, Pachydomella Ulrich.

Family ENTOMIDÆ Jones.

Elpe Barrande, Entomidella Jones, Entomis Jones.

Family CYPRIDINIDÆ Sars.

Cypridina Milne-Edwards.

POSITION UNCERTAIN.

Faberia Miller.

Superorder CIRRIPEDIA.

Order THORACICA.

Family LEPIDOCOLEIDÆ Clarke.

Lepidocoleus Faber.

Family TURRILEPADIDÆ Clarke.

Turrilepas Woodward.

Family LEPADIDÆ Darwin.

Pollicepes Leach.

Superorder MALACOSTRACA.

Division PHYLLOCARIDA.

Family CERATIOCARIDÆ Salter.

Caryocaris Salter, Ceratiocaris McCoy.

Family ECHINOCARIDÆ Clarke.

Aristozoe Barrande, Emmelezoe Jones and Woodward.

Class ARACHNIDA.

Subclass MEROSTOMATA.

Order SYNXIPHOSURA.

Family HEMIASPIDÆ Zittel.

Pseudoniscus Nieszkowski.

Order EURYPTERIDA.

Family EURYPTERIDÆ Burmeister.

Dolichopterus Hall, Echinognathus Walcott, Eurypterus Dekay, Eusarcus Grote and Pitt, Megalograptus Miller, Onychopterus Clarke and Ruedemann, Stylonurus Page (subgenera Ctenopterus Clarke and Ruedemann and Drepanopterus Laurie), Tylopterus Clarke and Ruedemann.

Family PTERYGOTIDÆ Lankester.

Hughmilleria Salter, Pterygotus Agassiz.

Subclass EMBOLOBRANCHIATA.

Order SCORPIONIDA.

Proscorpius Whitfield.

Phyllum VERTEBRATA.

Class PISCES.

Astraspis Walcott, Ctenopleuron Matthews, Cyathaspis Lankaster, Dictyorhabdus Walcott, Eriptychius Walcott, Onchus Agassiz, Palæaspis Claypole.

FISH PLATES AND TEETH? (CONODONTS).

Drepanodus Pander, Polygnathus Hinde, Prioniodus Pander, Distacodus Hinde.

PLANT KINGDOM.

ALGÆ, etc.

Buthograptus Hall (alga).
Callithamnopsis Whitfield (alga).
Chætocladus Whitfield (alga).
Corematocladus Ruedemann (alga).
Cryptozoon Hall (alga).
Girvanella Nicholson and Etheridge (alga).
Nematophycus Carruthers.
Oldhamia Forbes (alga?).
Peronosporites Smith.
Phytopsis Hall
Primicorallina Whitfield (alga).
Protostigma Lesquereux.
Sphærococcites Sternberg.
Solenopora Billings (alga).
Sphenophyllum Koenig.
Sphenophycus Ruedemann (alga).
Wingia Seely (possibly algal in part).
See also under Sponges for other possible algæ.

"FUCOIDS."

Arthraria Billings.
Blastophycus Miller and Dyer.
Boliviana Salter.
Buthotrephis Hall.
Chondrites Sternberg.
Cruziana D'Orbigny.
Dactylophycus Miller and Dyer.
Discophycus Walcott.
?Discophyllum Hall.
Dystactophycus Miller.
Heliophycus Miller and Dyer.
Ichnophycus Hall.
Licrophycus Billings.
Lockeia James.
Palæophycus Hall.
Rusophycus Hall.
Trichophycus Miller and Dyer.

ALPHABETICAL LIST OF GENERA.[1]

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FAUNAL LISTS OF AMERICAN OZARKIAN TO LOWEST HELDERBERGIAN.

OZARKIAN FAUNAS.

OZARKIAN OF UPPER MISSISSIPPI VALLEY.

(Oneota=O.; Mendota=M.)

Archinacella similis (Whitfield). (M.)
Ascoceras gibberosum Sardeson. (O.)
Billingsella coloradoensis (Shumard). (O.)
Climactichnites fosteri Todd (Upper Cambrian?).
Climactichnites wilsoni Todd (Upper Cambrian?).
Cyrtoceras dresbachense Sardeson. (O.)
Cyrtoceras loculosum Hall. (O.)
Cyrtoceras luthei Calvin. (O.)
Cyrtoceras(?) *winonicum* Sardeson. (O.)
Euomphalus winonensis Sardeson. (O.)
Hypseloconus recurvus (Whitfield). (M.)
Illænurus convexus Whitfield. (M.)
Lingulella mosia (Hall). (O.)
Murchisonia?? *putilla* Sardeson. (O.)
Obolus dolatus (Sardeson). (O.)
Ophileta alturensis Sardeson. (O.)
Piloceras corniculum Sardeson. (O.)
Platycolpus barabuensis (Whitfield). (M.)
Platycolpus eatoni (Whitfield). (M.)
Raphistoma leiosomellum Sardeson. (O.)
Raphistoma lewistonense Sardeson. (O.)
Raphistoma minnesotense (Owen). (O.)
Raphistoma multivolvatum Calvin. (O.)
Raphistoma oweni Sardeson. (O.)
Raphistoma paucivolvatum Calvin. (O.)
Raphistoma pepinense (Meek). (O.)
Scævogyra elevata Whitfield. (M.)
Scævogyra obliqua Whitfield. (M.)
Scævogyra swezeyi Whitfield. (M.)
Sinuopea obesa (Whitfield). (O.)
Sinuopea strongi (Whitfield). (O.)
Sinuopea turgida (Hall). (O.)
Straparollus claytonensis Calvin. (O.)
Straparollus intralobatus Sardeson. (O.)
Straparollus pristiniformis Calvin. (O.)
Tryblidium barabuensis (Whitfield). (M.)
Tryblidium retrorsum (Whitfield). (M.)

OZARKIAN OF MIDDLE APPALACHIAN VALLEY. (?UPPER CAMBRIAN)

(Potsdam=P.; Kittatinny=K.; Hoyt=H.; Conococheague=C.)

Anomocare parvula Weller. (K.)
Calvinella newtonensis (Weller). (K.)
Climactichnites wilsoni Logan. (P.)
Conokephalina whitehallensis (Walcott). (P.)
Cryptozoon bassleri Wieland.
Cryptozoon proliferum Hall. (H.)
Dikelocephalus harti (Walcott). (H.)
Dikelocephalus tribulis (Walcott). (H.)
Eoorthis newtonensis (Weller). (K.)
Hyolithellus papillatus Walcott. (P.)
Hyolithes gibbosus Hall and Whitfield. (P.)
Lingulella (*Lingulepis*) *acuminata* (Conrad). (H., P.)
Lingulella prima (Conrad). (P.)
Lonchocephalus calciferus (Walcott). (K., H.)
Matherella saratogensis (Walcott). (H.)
Matthevia variabilis Walcott. (H.)
Obolus (*Westonia*) *stoneanus* (Whitfield). (K.)
Pagodia seelyi Walcott. (P.)
Palæacmæa typica Hall and Whitfield. (H.)
Pelagiella hoyti (Walcott). (H.)
Pelagiella minutissima (Walcott). (H.)
Plethopeltis saratogensis (Walcott). (H., K.)
Protichnites alternans Owen. (P.)
Protichnites lineatus Owen. (P.)
Protichnites logananus (Marsh). (P.)
Protichnites multinotatus Owen. (P.)
Protichnites septemnotatus Owen. (P.)
Ptychaspis speciosus Walcott. (H.)
Ptychoparia blairi Weller. (P.)
Ptychoparia matheri Walcott. (P.)
Ptychoparia minuta (Bradley). (P.)
Ptychoparia newtonensis Weller. (K.)
Saukia stosei Walcott. (C.)
Scolithus canadensis Billings. (P.)
Scolithus linearis? Haldeman. (P.)
Solenopleura jerseyensis (Weller). (K.)
Tryblidium cornutaforme (Walcott). (H.)

OZARKIAN (LITTLE FALLS) OF NEW YORK.

Cryptozoon proliferum Hall. (Base of Little Falls.)
Helicotoma uniangulata (Hall). (Chert bed at top.)
Holopea dilucula Hall. (Chert bed at top.)
Holopea raymondia Cleland. (Chert bed at top.)
Holopea? *voluta* Cleland. (Chert bed at top.)
Lingulepis acuminata Conrad. (Base of Little Falls.)
Sinuopea turgida (Hall). (Chert bed at top.)
Tryblidium patulum Cleland. (Chert bed at top?)

OZARKIAN? (ERRATICS IN LEVIS) POINT LEVIS, QUEBEC.

Acrotreta ovalis Walcott
Agnostus americanus Billings.
Agnostus canadensis Billings.
Agnostus orion Billings.
Anacheirurus? *apollo* (Billings).
Anomocarella belli (Billings).
Anomocarella oweni (Billings).
Anomocarella planifrons (Billings).
Apatokephalus corax (Billings).
Arionellus? *cylindricus* Billings.
Arionellus subclavatus Billings.
Bathyurellus litoreus Billings.
Bathyurellus rarus Billings.
Calathium? *pannosum* Billings.
Conokephalina? *cristata* (Billings).
Conokephalina megalops (Billings).
Cyrtoceras alethes Billings.

Elkania ida (Billings).
Eopteria? ornata Billings.
Hebertella battis (Billings).
Helicotoma misera Billings.
Holopea leiosoma Billings.
Hungaia magnifica (Billings).
Leptella decipiens (Billings).
Leptella sordida (Billings).
Levisia nasuta Walcott.
Levisia richardsoni Walcott.
Lingulella iris (Billings).
Lisania? hisingeri (Billings).
Lloydia bituberculatus (Billings).
Lloydia oblongus (Billings).
Loganellus logani (Devine).
Lophospira jessica (Billings).
Megalaspis goniurus (Billings).
Menocephalus globosus Billings.
Menocephalus salteri Devine.
Menocephalus sedgwicki Billings.
Metoptoma?? anomala Billings.
Metoptoma?? augusta Billings.
Metoptoma melissa Billings.
Murchisonia? sylvia Billings.
Ophileta profunda Billings.
Orthidium gemmicula (Billings).
Orthis? apicalis (Billings).
Orthis(?) eudocia Billings.
Orthis euryone Billings.
Orthis(?) mycale Billings.
Orthis panderiana Hall and Clarke.
Orthis(?) tritonia Billings.
Orthoceras autolycus Billings.
Palæacmæa orphyne (Billings).
Platycolpus affinis (Billings).
Platycolpus capax (Billings).
Platycolpus dubius (Billings).
Plethopeltis armatus (Billings).
Pleurotomaria postumia Billings.
Pleurotomaria (*Euconia?*) *quebecensis* (Billings).
Pleurotomaria rotundispira Billings.
Pleurotomaria (*Eccyliomphalus?*) *vagrans* (Billings).
Pseudosphærexochus? eryx (Billings).
Ptychaspis? pauper (Billings).
Ptychaspis? selectus (Billings).
Ptychaspis sesostris (Billings).
Ptychoparia? devinei (Billings).
Ptychoparia zenkeri (Billings).
Scenella? venillia (Billings).
Seelya cassandra (Billings).
Symphysurus illænoides (Billings).
Syntrophia arachne (Billings).
Syntrophia arethusa Billings.
Tryblidium hyrie (Billings).

CANADIAN FAUNAS.

CANADIAN OF THE APPALACHIAN REGION.

(Phillipsburg, Quebec=P.; Beekmantown, New York=B.; Fort Cassin, Vermont=C.; Tribes Hill formation=T. H. The symbols D1-D4 and E refer to the divisions of the Beekmantown. Species unplaced in the general section are followed by the locality.)

Aphetoceras attenuatum Hyatt. (P.)
Aphetoceras farnsworthi (Billings). (P.) (D4.)
Archinacella pileolum (Whitfield). (B.) (D1.)
Archinacella simplex (Billings). (Ontario.)
Asaphellus gyracanthus Raymond. (T. H.; New Jersey.)
Asaphus? curiosus Billings. (Quebec.)
Asaphus(?) pelops Billings. (Quebec.)
Baltoceras(?) pusillum Ruedemann. (C.)
Bathyurellus expansus Billings. (Quebec.)
Bathyurus angelini Billings. (Quebec.)
Bathyurus arcuatus Billings. (Quebec.)
Bathyurus glandicephalus Whitfield. (C.) (E.)
Bathyurus perkinsi Whitfield. (Vermont.) (D4.)
Bathyurus taurifrons Dwight. (Rochdale County, N. Y.)
Bellerophon calcifer Cleland. (T. H.)
Bellerophon subovatus Cleland. (T. H.)
Billingsella dice Walcott. (Vermont.)
Billingsella(?) primordialis (Whitfield). (C.) (D4.)
Bolbocephalus seelyi (Whitfield). (C., B.) (D4.)
Bolbocephalus? truncatus Whitfield. (C.) (D4.)
Bucania tripla (Whitfield). (Vermont.) (E.)
Camarella breviplicata Billings. (Quebec.)
Camarella(?) costata Billings. (Quebec.)
Camarella polita Billings. (Quebec.)
Cameroceras (*Proterocameroceras*) *brainerdi* (Whitfield). (C.) (D4.)
Cameroceras marcoui (Barrande). (P.)
Ceratopea keithi Ulrich. (Va., Tenn., Md.)
Ceraurus?? solitarius Billings. (Quebec.)
Clelandia parabola (Cleland). (T. H.)
Clisospira curiosa Billings. (Quebec.)
Clisospira lirata Whitfield. (C.) (D4.)
Cryptozoon lachutense Dawson. (Quebec.)
Cryptozoon saxiroseum Seely. (B)
Cryptozoon steeli Seely. (New York, etc.) (B.)
Cryptozoon wingi Seely. (Vermont.)
Cyclonema phædra Billings. (Quebec.)
Cyclostomiceras cassinense (Whitfield). (C.) (D4.)
Cyclostomiceras minimum (Whitfield). (C.) (D4.)
Cyrtendoceras(?) priscum Ruedemann. (B.) (D.)
Cyrtoceras? acinacellum Whitfield. (C.) (D4.)
Cyrtoceras aristides Billings. (P.) (D2.)
Cyrtoceras beekmanense Whitfield. (B.) (D1.)
Cyrtoceras? confertissimum (Whitfield). (C.) (D4.)
Cyrtoceras? dactyloides Dwight. (Rochdale, N. Y.)
Cyrtoceras gracilis Cleland. (T. H.)
Cyrtoceras microscopicum Dwight. (Rochdale, N. Y.)
Cyrtoceras missisquoi Billings. (P.) (D2.)
Cyrtoceras vassarina Dwight. (Rochdale, N. Y.)
Cyrtolites sinuatus Hall and Whitfield. (New Jersey.)
Dalmanella electra (Billings). (New Jersey.)
Dalmanella(?) evadne (Billings). (C.) (D4.)
Dalmanella holiensis Cleland. (T. H.)
Dalmanella macleodi (Whitfield). (B.) (D1.)
Dalmanella wemplei Cleland. (T. H.)
Dictyonema furciferum Ruedemann. (Pennsylvania.)
Dikelocephalus? missisquoi Billings. (P.) (D2.)
Dolichometopus(?) rarus Billings. (Oxford, Canada.)
Eccyliomphalus calciferus (Whitfield). (B.) (D1.)
Ecclyiomphalus (*Orthostoma*) *canadensis* (Billings). (P.)
Eccyliomphalus compressus (Whitfield). (Vermont.)
Eccyliomphalus intortus (Billings). (P.)
Eccyliomphalus (*Orthostoma*) *lituiformis* (Whitfield). (C.) (D4.)

Eccyliomphalus multiseptarius (Cleland). (T. H.)
Eccyliomphalus perkinsi (Whitfield). (C.) (D4.)
Eccyliomphalus priscus (Whitfield). (B.) (D1.)
Eccyliomphalus spiralis (Billings). (P.)
Eccyliomphalus subellipticus Weller. (New Jersey.)
Eccyliopterus disjunctus (Billings). (Ontario.)
Eccyliopterus triangulus (Whitfield). (Vermont.) (D4.)
Eccyliopterus volutatus (Whitfield). (C.) (D4.)
Ectomaria missisquoi (Billings). (Quebec.)
Edmondia?? arcuata Cleland. (New York.)
Endoceras(?) champlainensis Ruedemann. (B.) (D.)
Endoceras montrealense (Billings). (Quebec, Canada.) (D4.)
Eoharpes cassinensis (Whitfield). (Vermont.) (D4.)
Eoharpes granti (Billings). (Quebec.)
Eopteria richardsoni Billings. (Quebec.)
Eotomaria? cassina (Whitfield). (C.) (D4.)
Euconia beekmanensis (Whitfield). (B.) (D1.)
Euomphalus?? circumliratus Whitfield. (C.) (D4.)
Eurystomites accelerans Ruedemann. (Valcour, N. Y.) (D4.)
Eurystomites amplectens Ruedemann. (Valcour, N. Y.) (D4.)
Eurystomites imperator (Billings). (P.) (D4.)
Eurystomites kelloggi (Whitfield). (C.) (D4.)
Eurystomites rotundus Hyatt. (C.) (D4.)
Eurystomites virginianus Hyatt. (Virginia; C.)
Fusispira obesa (Whitfield). (C.) (D4.)
Fusispira psyche (Billings). (Quebec.)
Goniurus caudatus (Billings). (C.)
Goniurus elongatus Raymond. (P.)
Goniurus perspicator (Billings). (Quebec.)
Harpides(?) desertus Billings. (Quebec.)
Helicotoma similis Whitfield. (Vermont.) (E.)
Hemigyraspis collieana Raymond. (Pennsylvania.)
Holasaphus moorei Raymond. (Quebec.)
Holopea obscura (Hall). (Fort Plain, N. Y.)
Holopea ovalis Billings. (Quebec.)
Holopea proserpina Billings. (P.) (D4.)
Hormotoma? artemesia (Billings). (Ontario; Virginia.)
Hormotoma? cassina (Whitfield). (C.) (D4.)
Hormotoma confusa (Whitfield). (Vermont.) (E.)
Hormotoma gracilens (Whitfield). (B.) (D1.)
Hormotoma obelisca (Whitfield). (C.) (D4.)
Hormotoma vesta (Billings). (P.)
Hystricurus conicus (Billings). (Canada; C.) (D4.)
Hystricurus cordai (Billings). (P.)
Hystricurus crotalifrons (Dwight). (Rochdale, N. Y.)
Illænus incertus Billings. (Quebec.)
Illænus simulator Billings. (Quebec.)
Isochilina cristata (Whitfield). (Vermont.) (E.)
Isochilina gregaria Whitfield. (C.) (E.)
Isochilina ottawa (Jones). (Quebec.)
Isochilina seelyi (Whitfield). (Vermont.) (E.)
Isoteloides whitfieldi Raymond. (C.) (D4.)
Kionoceras laqueatum (Hall). (New York.)
Leperditia anna Jones. (Quebec.)
Leperditia canadensis Jones. (Quebec.)
Leperditia nana (Jones). (Quebec.)
Lingula mantelli Billings. (Quebec.)
Lingula? ovata Cleland. (T. H.)
Lingulella (*Lingulepis*) *acuminata sequens* Walcott. (Essex County, N. Y.)
Liospira prævia (Whitfield). (B.) (D1.)
Liospira strigata Collie. (Pennsylvania.)
Lloydia saffordi (Billings). (P.)
Lloydia? strenuus (Billings). (Quebec.)
Lophospira calcifera Whitfield. (B.) (D1.)
Maclurites acuminatus (Billings). (C.) (D4.)
Maclurites affinis (Billings). (Vermont.) (D4.)
Maclurites matutinus (Hall). (T. H.)
Maclurites oceanus (Billings). (Virginia.)
Maclurites sordidus (Hall). (C.) (D1.)
Monocraterion lesleyi Prime. (Pennsylvania.)
Murchisonia?? mohawkensis Cleland. (T. H.)
Murchisonia?? prava (Whitfield). (C.) (D4.)
Nanno primaevus Whiteaves. (Ontario.)
Nautilus?? pomponius Billings. (P.) (D4.)
Nileus striatus (Whitfield). (C.) (D4.)
Oncoceras vasiforme Dwight. (Rochdale, N. Y.)
Ooceras kirbyi (Whitfield). (B., T. H.) (D1.)
Ooceras(?) raei (Whitfield). (B.)
Ophileta abdita Billings. (P.)
Ophileta bella Billings. (Quebec.)
Ophileta compacta Salter. (Quebec.)
Ophileta complanata Vanuxem. (B., Pa., Md., Va.)
Ophileta levata Vanuxem. (T. H.)
Ophileta uniangulata (Hall). (Saratoga Co., N. Y.)
Orthis corinna Billings. (Quebec.)
Orthis hippolyte Billings. (P.)
Orthis(?) minna Billings. (Quebec.)
Orthoceras atticus Billings. (Quebec.)
Orthoceras cataline Billings. (P.) (D2.)
Orthoceras cato Billings. (P.) (D2.)
Orthoceras catulus Billings. (P.) (D2.)
Orthoceras edax Billings. (Ontario.)
Orthoceras glaucus Billings. (Ontario.)
Orthoceras hageri Hall. (Vermont.)
Orthoceras henrietta Dwight. (Rochdale, N. Y.)
Orthoceras ordinatum Billings. (Ontario.)
Orthoceras perseus Billings. (P.) (E.)
Orthoceras? primigenium Vanuxem. (T. H.)
Orthoceras repens Billings. (P.) (D2.)
Orthoceras sayi Billings. (P.) (D2.)
Orthoceras spissiseptum Dwight. (Rochdale, N. Y.)
Orthoceras tityrus Billings. (P.) (D2.)
Orthoceras veterator Billings. (Ontario.)
Orthoceras xerxes Billings. (P.) (E.)
Orygoceras cornuoryx (Whitfield). (C.) (D4.)
Oxydiscus macer (Billings). (Quebec.)
Oxydiscus palinurus (Billings). (Quebec.)
Palæophycus beauharnoisense Billings. (Quebec.)
Palæophycus beverlyense Billings. (Quebec.)
Palæophycus funiculus Billings. (L'Original, Canada.)
Palæophycus irregulare Hall. (Chazy, N. Y.)
Palæophycus tubulare Hall. (T. H.)
Petigurus cybele (Billings). (Quebec.)
Petigurus ellipticus (Cleland). (T. H.)
Piloceras amplum Dawson. (Quebec.)
Piloceras explanator Whitfield. (C.) (D4.)
Plethospira arenaria (Billings). (Quebec; C.) (D4.)
Plethospira cassina (Whitfield). (C.) (D4.)
Pleurotomaria arabella Billings. (Quebec.)
Pleurotomaria calcifera Billings. (Quebec.)
Pleurotomaria canadensis Billings. (Quebec.)
Pleurotomaria floridensis Cleland. (T. H.)

Pleurotomaria gregaria Billings. (Quebec.)
Pleurotomaria missisquoi Billings. (P.)
Pliomerops convexus (Billings). (Quebec.)
Pliomerops salteri (Billings). (P.)
Pliomerops westoni (Billings). (Quebec.)
Polygyrata hunterensis (Cleland). (F. H.)
Polygyrata sinistra Weller. (New Jersey.)
Polytœchia apicalis (Whitfield). (C.) (D4.)
Primitia logani (Jones). (Quebec.)
Primitia logani leperditioides (Jones). (Quebec.)
Primitia logani reniformis (Jones). (Quebec.)
Protocycloceras(?) furtivum (Billings).
Protocycloceras lamarcki (Billings). (B., Quebec, etc.)
Protocycloceras whitfieldi Rudemann. (C.) (D4.)
Protorthis? cassinensis Whitfield. (C.) (D4.)
Protorthis? minima Whitfield. (C.) (D4.)
Pycnoceras calciferiforme Hyatt. (P.)
Raphistoma compressum Whitfield. (C.) (D4.)
Raphistoma hortensia (Billings). (C.) (D4.)
Raphistoma obtusum Cleland. (T. H.)
Remopleurides affinis Billings. (Quebec.)
Ribeiria calcifera Billings. (Quebec.)
Ribeiria compressa Whitfield. (C.) (D4.)
Ribeiria? longiuscula Billings. (Quebec.)
Ribeiria? nuculitiformis Cleland. (T. H.)
Ribeiria nuculitiformis equilatera Cleland. (T. H.)
Ribeiria parva Collie. (Pennsylvania.)
Ribeiria turgida Cleland. (T. H.)
Ribeiria ventricosa Whitfield. (C.) (D4.)
Scenella? alta (Whitfield). (B.) (D1.)
Scenella cassinensis Bassler. (C.) (D4.)
Scenella conica Ulrich and Scofield. (C.) (D4.)
Scenella orithyia (Billings). (P.)
Schrœderoceras cassinense (Whitfield). (C.) (D4.)
Schrœderoceras eatoni (Whitfield). (C.) (D4.)
Scolithus minutus Brainerd and Seely. (Vermont.) (C.)
Seelya difficilis (Whitfield). (C.) (D4.)
Seelya ventricosa Ulrich. (C.) (D4.)
Sinuites cassinensis (Whitfield). (C.) (D4.)
Sinuites rossi (Collie). (Pennsylvania.)
Straparollina minima Whitfield. (Vermont.)
Straparollus parvus Cleland. (T. H.)
Symphysurus convexus (Cleland). (T. H.)
Syntrophia(?) armanda (Billings). (P.) (D2.)
Syntrophia calcifera (Billings). (P.)
Syntrophia campbelli Walcott. (Tennessee.)
Syntrophia lateralis (Whitfield). (C.; Fort Hunter, N. Y.; N. J.) (D 4, etc.)
Syntrophia palmata Cleland. (T. H.)
Tarphyceras champlainense (Whitfield). (C.) (D4.)
Tarphyceras clarkei Ruedemann. (Valcour, N. Y.) (D4.)
Tarphyceras farnsworthi (Billings). (P.)
Tarphyceras macdonaldi Hyatt. (Virginia.)
Tarphyceras perkinsi (Whitfield). (C.) (D4.)
Tarphyceras seelyi (Whitfield). (C.) (D4.)
Triplecia(?) radiata Whitfield. (B.) (D1.)
Trocholites internistriatus (Whitfield). (C.) (D4.)
Trocholitoceras walcotti Hyatt. (C.) (D4.)
Trochonema exile Whitfield. (B.) (D1.)
Tryblidium? acutum Whitfield. (B.) (D1.)
Tryblidium niobe (Billings). (P.)
Tryblidium ovale Whitfield. (C.) (D4.)
Tryblidium ovatum Whitfield. (C.) (D4.)
Turritoma ada (Billings). (Quebec.)
Wingia congregata Seely. (C.)
Wingia discoidea Seely. (Vermont.)
Wingia lapilla Seely. (Vermont.)

CANADIAN OF MISSISSIPPI VALLEY AND WESTERN NORTH AMERICA.

Aphetoceras complanatum Shumard. (Missouri.)
Bucanella nana Meek. (Colorado.)
Caryocaris wrighti Salter. (Arkansas.)
Ceratopyge canadensis Walcott. (Goodsir of British Columbia.)
Clarkella montanensis Walcott. (Montana.)
Clarkoceras newton winchelli (Clarke). (Shakopee of Minnesota.)
Cryptozoon giganteum Chaney. (Shakopee of Minnesota.)
Cryptozoon minnesotense Winchell (Shakopee of Minnesota.)
Cryptozoon minnesotense libertatis Winchell. (Shakopee of Minnesota.)
Dendrograptus serpens Hopkinson. (Nevada.)
Dicellomus nanus (Meek and Hayden). (Wyoming.)
Didymograptus euodus Lapworth.
Didymograptus perflexus Gurley. (Nevada.)
Eccyliomphalus gyroceras (Roemer). (Texas.)
Eccyliopterus michleranus (Hall). (Texas.)
Endoceras consuetum Sardeson. (Shakopee of Minnesota.)
Eoorthis desmopleura (Meek). (Colorado.)
Eoorthis desmopleura nympha Walcott. (Colorado.)
Eoorthis wichitaensis Walcott. (Colorado.)
Glossograptus ciliatus horridus Ruedemann. (Nevada.)
Helicotoma(?) peccatonica Sardeson. (Shakopee of Minnesota.)
Hemigyrapsis mcconnelli Raymond. (Goodsir of British Columbia.)
Hormotoma argylensis (Sardeson). (Shakopee of Minnesota.)
Hormotoma melaniaformis (Shumard). (Missouri.)
Lingulella? allani Walcott. (Goodsir of British Columbia.)
Lingulella desiderata (Walcott). (Colorado.)
Lingulella moosensis Walcott. (Goodsir of British Columbia.)
Megalaspis goniocerca (Meek). (Utah.)
Murchisonia? carinifera Shumard (Missouri).
Murchisonia ozarkensis Shumard (Missouri).
Obolus discoidea (Hall and Whitfield). (Utah.)
Obolus (*Westonia*) *elongatus* (Walcott). (Utah.)
Obolus loperi Walcott (Colorado).
Obolus matinalis (Hall). (Colorado.)
Obolus mollisonensis Walcott. (Goodsir of British Columbia.)
Obolus (*Westonia*) *notchensis* Walcott. (Utah.)
Obolus (*Westonia*) *rogersi* Walcott. (Drift, Mass.)
Obolus rotundatus Walcott.
Ophileta complanata nana Meek. (Utah.)
Orthoceras colon White. (Utah.)
Orthoceras ozarkense Shumard. (Missouri.)
Phyllograptus loringi White. (Utah.)
Polygyrata polygyrata (Roemer). (Texas.)
Polygyrata rotuliformis (Meek). (Nevada.)
Polygyrata trochiscus (Meek). (Nevada.)
Raphistoma ruidum Sardeson. (Shakopee of Minnesota.)
Raphistoma subplanum Shumard. (Missouri.)

Schizambon manitouensis Walcott. (Colorado.)
Straporollus sanctisabæ (Roemer). (Texas.)
Straporollus valvataformis Shumard. (Missouri.)
Subulites exactus Sardeson. (Shakopee of Minnesota.)
Tryblidium reperium Sardeson. (Shakopee of Minnesota.)

CANADIAN (LEVIS AND SILLERY) OF QUEBEC.

(Unless otherwise marked all are from the Levis.)

Acanthodictya hispida Hinde. (Metis.)
Acrothele levisensis Walcott.
Acrothele pretiosa (Billings). (Levis and Sillery.)
Acrothele rotunda (Nicholson).
Agnostus sidebladhi Linnarsson.
Arionellus subclavatus Billings.
Buthotrephis pergracilis Dawson.
Callograptus diffusus (Hall).
Callograptus elegans Hall.
Callograptus salteri Hall.
Caryocaris curvilatus Gurley.
Caryocaris oblongus Gurley.
Chondrites metissicus Dawson. (Metis.)
Climacograptus pungens Ruedemann.
Clonograptus abnormis (Hall).
Clonograptus flexilis (Hall).
Clonograptus milesi (Hall).
Clonograptus remotus (Gurley).
Clonograptus rigidus (Hall).
Cryptograptus? antennarius (Hall).
Cyathophycus quebecensis Dawson. (Metis.)
Cyrtoceras dictys Billings.
Cyrtoceras quebecensis Whiteaves.
Cyrtoceras surgens Barrande.
Cyrtocerina mercurius Billings.
Dalmanella electra (Billings).
Dalmanella(?) evadne (Billings).
Dawsonia acuminata Nicholson.
Dawsonia monodon Gurley.
Dawsonia tenuistriata Nicholson.
Dawsonia tridens Gurley.
Dendrograptus divergens Hall.
Dendrograptus erectus Hall.
Dendrograptus flexuosus Hall.
Dendrograptus fruticosus Hall.
Dendrograptus gracilis Hall.
Dendrograptus striatus Hall.
Dendrograptus(?) succulentus Ruedemann.
Desmograptus cancellatus (Hopkinson).
Dichograptus octonarius (Hall).
Dictyonema furciferum Ruedemann.
Dictyonema grande Nicholson.
Dictyonema irregulare Hall.
Dictyonema murrayi Hall.
Dictyonema perexile Gurley.
Dictyonema quqdrangulare (Hall).
Dictyonema rectilineatum Ruedemann.
Dictyonema robusta Hall.
Didymograptus arcuatus (Hall).
Didymograptus bifidus (Hall).
Didymograptus bipunctatus Gurley.
Didymograptus caduceus nanus Ruedemann.
Didymograptus extensus (Hall).
Didymograptus extenuatus (Hall).
Didymograptus forcipiformis Ruedemann.
Didymograptus furcillatus Lapworth.
Didymograptus indentus (Hall).
Didymograptus nitidus (Hall).
Didymograptus patulus (Hall).
Didymograptus pennatulus (Hall).
Didymograptus similis (Hall.)
Diplograptus dentatus (Brongniart).
Diplograptus inutilis Hall.
Elkania desiderata (Billings).
Endymionia meeki (Billings).
Eremoceras syphax (Billings).
Goniograptus perflexilis Ruedemann.
Goniograptus thureaui McCoy.
Halichondrites confusus Dawson and Hinde.
Holograptus richardsoni (Hall).
Holometopus angelini Billings.
Hyalostelia? metissica Dawson. (Metis.)
Hystricurvis cordai (Billings).
Lasiothrix curvicostata Dawson and Hinde. (Metis.)
Lasiothrix flabellata Dawson and Hinde. (Metis.)
Leiostegium quadratum (Billings).
Leptograptus macrotheca Gurley.
Lingula quebecensis Billings.
Lingulella ellsi (Walcott). Sillery.
Lingulella irene (Billings).
Loganograptus logani (Hall).
Mælonoceras metellus Billings.
Ophileta abdita Billings.
Orthis hippolyte Billings.
Palæacmæa quebecensis (Billings).
Palæosaccus dawsoni Hinde. (Metis.)
Phyllograptus angustifolius Hall.
Phyllograptus anna Hall.
Phyllograptus ilicifolius Hall.
Phyllograptus typus Hall.
Protospongia (*Diagoniella*) *coronata* (Dawson and Hinde). (Metis.)
Protospongia (*Diagoniella*) *cyathiformis* (Dawson and Hinde). (Metis.)
Protospongia delicatula Dawson and Hinde. (Metis.)
Protospongia mononema Dawson and Hinde. (Metis.)
Protospongia polynema Dawson and Hinde. (Metis.)
Protospongia tetranema Dawson. (Metis.)
Ptilograptus geinitzianus Hall.
Ptilograptus plumosus Hall.
Retiograptus tentaculatus (Hall).
Sabellarites phosphaticus Dawson. (Metis.)
Shumardia granulosa Billings.
Shumardia pusilla (Sars).
Siphonotreta(?) micula McCoy.
Stephanella hindi Dawson. (Metis.)
Syntrophia calcifera (Billings).
Temnograptus noveboracensis Ruedemann.
Temnograptus ramulus (Hall).
Tetragraptus acanthonotus Gurley.
Tetragraptus alatus (Hall).
Tetragraptus amii (Lapworth).
Tetragraptus approximatus (Nicholson).
Tetragraptus crucifer (Hall).
Tetragraptus denticulatus (Hall).
Tetragraptus fruticosus (Hall).
Tetragraptus headi (Hall).
Tetragraptus pendens Elles.
Tetragraptus quadribrachiatus (Hall).
Tetragraptus serra (Brongniart).
Tetragraptus similis (Hall).
Thamnograptus anna Hall.
Trigonograptus ensiformis (Hall).

CANADIAN (BRETONIAN) OF CAPE BRETON AND NEW BRUNSWICK.

(C3a—Parabolina zone. C3b—Peltura zone. C3c—Dictyonema zone. C3c2—Asaphellus zone. C3d—Lower Tetragraptus zone. C3e—Lingulella (Leptobolus) grandis zone.)

Acantholenus spiniger (Matthew). (C3b.)
Acrotreta belti (Matthew). (C3c.)
Acrotreta bisecta Matthew. (C3c.)
Acrotreta convexa Walcott. (C3c.)
Agnostus acadicus declivus Matthew. (C3b.)
Agnostus bisectus Matthew. (C3b.)
Agnostus pisiformis (Linnæus). (C3a.)
Agnostus pisiformis affinis Matthew. (C3a.)
Agnostus pisiformis rugulosus Matthew. (C3a.)
Agnostus pisiformis valida Matthew. (C3a.)
Agnostus trisectus Salter. (C3b.)
Agnostus trisectus germanus Matthew. (C3b.)
Agnostus trisectus ponepunctus Matthew. (C3b.)
Anomocare stenotoides (Matthew). (C3a.)
Asaphellus homfrayi (Salter). (C3c2.)
Bellerophon bretonensis Matthew. (C3c.)
Bellerophon insulae Matthew. (C3c2.)
Bellerophon semisculptus Matthew. (C3c2.)
Bryograptus spinosus Matthew. (C3c.)
Camarella parva Billings. (C3a.)
Clitambonites planus retroflexus (Verneuil).
Clonograptus flexilis (Hall). (C3d.)
Clonograptus? spinosus Matthew. (C3b.)
Conocephalites(?) contiguus Matthew. (C3a.)
Ctenopyge acadica Matthew. (C3b.)
Ctenopyge? lobata (Brögger). (C3b.)
Ctenopyge pecten (Salter). (C3a.)
Ctenopyge spectabilis (Brögger). (C3b.)
Cyclognathus rotundifrons Matthew. (C3d.)
Dalmanella electra Billings.
Dalmanella electra lævis (Matthew). (C3d.)
Dalmanella electra major (Matthew). (C3d.)
Dictyonema flabelliforme (Eichwald). (C3c.)
Dictyonema perexile Gurley. (C3d.)
Dictyonema quadrangulare (Hall). (C3d.)
Didymograptus indentus (Hall). (C3d.)
Didymograptus nitidus (Hall). (C3d.)
Didymograptus patulus (Hall.) (C3d.)
Eoorthis atava (Matthew). (C3a.)
Eoorthis johannensis (Matthew). (C3a.)
Eoorthis (Orusia) lenticularis (Wahlenberg). (C3ac.)
Eoorthis (Orusia) lenticularis atrypoides (Matthew) (C3a.)
Eoorthis (Orusia) lenticularis lyncioides (Matthew). (C3a.)
Hemigyraspis plana (Matthew). (C2, C3.)
Lejopyge cyclopyge? (Tullberg). (C3b.)
Leptoplastus latus Matthew. (C3b.)
Leptoplastus spinosus Matthew. (C3b.)
Lingulella concinna Matthew. (C3c.)
Lingulella davisi (McCoy). (C3c2.)
Lingulella (Lingulepsis) exigua (Matthew). (C3b.)
Lingulella ferruginea Salter. (C3c.)
Lingulella grandis (Matthew). (C3e.)
Lingulella lævis Matthew. (C3a.)
Lingulella lævis grandis Matthew. (C3a.)
Lingulella lens (Matthew). (C3a?)
Lingulella lepis (Salter). (C3a and C3c.)
Lingulella minor (Matthew). (C3d.)
Logansograptus logani (Hall). (C3d.)
Obolus (Palæobolus) bretonensis (Matthew). (C3a
Obolus (Westonia) escasoni (Matthew). (C3ab.)
Obolus refulgens Matthew. (C3a.)
Obolus (Brøggeria) salteri (Hall). (C3a.)
Orthis carausii Salter. (C3a.)
Orthis euryone Billings. (C3d.)
Orthis menapiæ Hicks. (C3d.)
Orthis panderiana Hall and Clarke. (C3d.)
Orthoceras catulus Billings. (C3d.)
Orthoceras priamus Billings. (C3d.)
Parabolina dawsoni Matthew. (C3b.)
Parabolina grandis (Matthew). (C3b.)
Parabolina heres lata Matthew. (C3b.)
Parabolina spinulosa (Wahlenberg). (C3a.)
Parabolinella limitis (Brögger). (C3c2.)
Parabolinella posthuma Matthew. (C3d.)
Parabolinella quadrata Matthew. (C3c2.)
Peltura scarabæoides (Wahlenberg). (C3b.)
Protopeltura acanthura tetracanthura Matth (C3a.)
Retiograptus tentaculatus (Hall). (C3d.)
Schizambon priscus Matthew. (C3c.)
Sphærophthalmus alatus (Boeck). (C3b.)
Sphærophthalmus alatus canadensis Matth (C3b.)
Sphærophthalmus flagellifer Angelin. (C3b.)
Sphærophthalmus fletcheri Matthew. (C3b.)
Staurograptus dichotomus Emmons. (C3c.)
Styliola corrugata (Matthew). (C3d.)
Styliola minuta (Matthew). (C3d.)
Styliola primæva Matthew. (C3d.)
Tetragraptus quadribrachiatus. (C3d.)
Triarthrus belli Matthew. (C3c2.)

CANADIAN (DEEPKILL) OF EASTERN NEW YOR

Bryograptus lapworthi Ruedemann.
Bryograptus pusillus Ruedemann.
Callograptus diffusus (Hall).
Callograptus salteri Hall.
Climacograptus pungens Ruedemann.
Clonograptus flexilis (Hall.)
Cryptograptus? antennarius (Hall).
Dawsonia monodon Gurley.
Dawsonia tridens Gurley.
Dendrograptus flexuosus Hall.
Dendrograptus fluitans Ruedemann.
Dendrograptus(?) succulentus Ruedemann.
Desmograptus intricatus Ruedemann.
Dichograptus octobrachiatus (Hall).
Dictyonema furciferum Ruedemann.
Dictyonema rectilineatum (Ruedemann).
Didymograptus acutidens Lapworth.
Didymograptus bifidus (Hall).
Didymograptus (Isograptus) caduceus (Salter).
Didymograptus cuspidatus Ruedemann.
Didymograptus ellesæ Ruedemann.
Didymograptus extensus (Hall).
Didymograptus filiformis Tullberg.
Didymograptus forcipiformis Ruedemann.
Didymograptus gracilis Tornquist.
Didymograptus incertus Ruedemann.
Didymograptus nanus Lapworth.
Didymograptus nitidus Hall.
Didymograptus nitidus grandis Ruedemann.
Didymograptus patulus (Hall).
Didymograptus similis (Hall).
Didymograptus spinosus Ruedemann.

Didymograptus tornquisti Ruedemann.
Diplograptus dentatus (Brongniart).
Diplograptus inutilis Hall.
Diplograptus longicaudatus Ruedemann.
Eunoa accola Clarke.
Glossograptus hystrix Ruedemann.
Goniograptus geometricus Ruedemann.
Goniograptus perflexilis Ruedemann.
Goniograptus thureaui McCoy.
Loganograptus logani (Hall).
Phyllograptus angustifolius Hall.
Phyllograptus anna Hall.
Phyllograptus ilicifolius Hall.
Phyllograptus typus Hall.
Ptilograptus geinitzianus Hall.
Ptilograptus plumosus Hall.
Ptilograptus tenuissimus Ruedemann.
Retiograptus tentaculatus (Hall).
Sigmagraptus præcursor Ruedemann.
Strophograptus trichomanes Ruedemann.
Temnograptus novaboracensis Ruedemann.
Tetragraptus amii (Lapworth).
Tetragraptus clarkei Ruedemann.
Tetragraptus fruticosus (Hall).
Tetragraptus (*Etagraptus*) *lentus* Ruedemann.
Tetragraptus pendens Elles.
Tetragraptus pygmæus Ruedemann.
Tetragraptus quadribrachiatus (Hall).
Tetragraptus serra (Brongniart).
Tetragraptus similis (Hall).
Tetragraptus taraxacum Ruedemann.
Tetragraptus woodæ Ruedemann.
Trigonograptus ensiformis (Hall).

CANADIAN (SCHAGHTICOKE) OF EASTERN NEW YORK.
(DICTYONEMA FLABELLIFORME BED.)

Dictyonema flabelliforme (Eichwald).
Staurograptus dichotomus Emmons.

CANADIAN (ROMAINE) OF MINGAN ISLANDS, QUEBEC

Archæoscyphia minganensis (Billings).
Bathyurus acutus Raymond.
Bathyurus angelini Billings.
Billingsella(?) grandæva (Billings).
Euconia ramsayi (Billings).
Eurystomites apollo Billings.
Fusispira calcifer (Billings).
Hormotoma anna Billings.
Lophospira? hermione (Billings).
Nautilus? ferox Billings.
Nipterella paradoxica (Billings).
Orthoceras becki Billings.
Orthoceras deparcum Billings.
Orthoceras indagator Billings.
Orthoceras sordidum Billings.
Pleurotomaria canadensis Billings.
Pleurotomaria misera Billings.
Raphistomina laurentina (Billings).
Receptaculites calciferus Billings.
Receptaculites? elegantulus Billings.
Rhabdaria fragilis Billings.
Rhabdaria furcata Billings.
Schrœderoceras palinurus (Billings).
Trichospongia sericea Billings.
Trochonema tricarinatum Billings.
Tryblidium nycteis (Billings).

CANADIAN (QUEBEC) OF NEWFOUNDLAND.

(Divisions D.-H. and N.-P., in part.)

Acrotreta gemma Billings. (P.)
Aphetoceras americanum Hyatt.
Aphetoceras boreale Hyatt.
Bathyurellus abruptus Billings. (E., G., H.)
Bathyurellus marginatus Billings. (F., G., H.)
Bathyurus timon Billings. (G., H.)
Calathium affine Billings. (G.)
Calathium anstedi Billings. (H.)
Calathium formosum Billings. (G.)
Callograptus elegans Hall. (P.)
Cyclolituites americanus Hyatt.
Dalmanella electra (Billings).
Deltoceras planum Hyatt.
Dolichometopus(?) convexus Billings. (G.)
Dolichometopus(?) gibberulus Billings. (G.)
Eccyliomphalus atlanticus (Billings). (F., G.)
Ectomaria adelina (Billings). (G.)
Endymionia meeki (Billings). (N., P.)
Eopteria typica Billings. (G.)
Eucharma blumenbachii (Billings). (G., H.)
Euconia etna (Billings). (G., H.)
Eurystomites gibbosus Hyatt.
Goniurus caudatus (Billings). (G., H.)
Helicotoma gorgonea Billings. (H.)
Helicotoma proserpina Billings. (G.)
Helicotoma tritonia Billings. (G.)
Holometopus angelini Billings. (N., P.)
Hormotoma agilis (Billings). (G., H.)
Hystricurus conicus (Billings). (P.)
Hystricurus cordai (Billings). (F., G., H., N.)
Leperditia turgida Billings. (F., H.)
Leptella decipiens (Billings). (P.)
Lingula hawleyi Matthew.
Lingula murrayi Billings.
Lingula quebecensis Billings. (P.)
Lingulella bella (Walcott).
Liospira numeria (Billings). (G.)
Litoceras biangulatum Hyatt.
Litoceras versutus (Billings). (H.)
Litoceras whiteavesi (Hyatt).
Lloydia saffordi (Billings). (P.)
Lloydia solitarius (Billings).
Maclurites acuminatus (Billings). (K., N.) (Chazyan?)
Maclurites affinis (Billings). (F.)
Maclurites oceanus (Billings). (F., H.)
Maclurites psyche (Billings). (G.)
Maclurites rotundatus (Billings). (G.)
Maclurites speciosus (Billings). (G., M.)
Maclurites sylpha (Billings). (G.)
Murchisonia? placida Billings. (G.)
Nautilus?? avus Barrande.
Nileus affinis Billings. (P.)
Obolus (*Lingulobolus*) *affinis* (Billings).
Obolus? murrayi Billings.
Obolus (*Lingulobolus*) *spissus* (Billings).
Ophileta bella Billings. (P.)
Ophileta nerine Billings. (F.)
Orthis hippolyte Billings. (P.)
Orthoceras explanator (Billings).
Orthoceras recedens Barrande.
Petigurus nero (Billings). (F., G., H., N.)
Phyllograptus typus Hall. (P.)
Piloceras canadense Billings. (F., H.)

Piloceras gracile Billings. (H.)
Piloceras triton Billings. (G.,H.)
Piloceras wortheni Billings. (H.)
Pleurotomaria agarista Billings. (H.)
Pleurotomaria (*Trochonema?*) *calphurnia* (Billings). (G.)
Pleurotomaria harpya Billings. (G.)
Pleurotomaria hyale Billings. (F.)
Pleurotomaria normani Billings. (G.)
Pliomerops insularis (Billings). (G.)
Ptilograptus plumosus (Hall). (P.)
Pycnoceras apertum Hyatt.
Pycnoceras calciferiforme Hyatt.
Raphistoma hortensia (Billings). (H.)
Shumardia glacialis Billings. (P.)
Straparollina pelagica Billings. (P.)
Syntrophia calcifera (Billings). (P.)
Tarphyceras aucoini Hyatt.
Tarphyceras calciferus (Billings). (F.,G.)
Tarphyceras extensum Hyatt.
Tarphyceras prematurum Hyatt.
Tetragraptus denticulatus (Hall). (P.)
Tetragraptus fruticosus (Hall). (P.)
Tetragraptus headi (Hall). (P.)
Tetragraptus serra (Hall). (P.)
Trachyum cyathiforme Billings. (G.)
Trachyum rugosum Billings. (G.)
Trochoceras? incipiens Barrande.
Turritoma acrea (Billings). (G.)

ORDOVICIAN FAUNAS.

ST. PETER SANDSTONE OF MISSISSIPPI VALLEY.

Crania(?) *reversa* Sardeson.
Ctenodonta absimilis (Sardeson).
Ctenodonta novicia (Sardeson).
Cyrtodonta descriptus (Sardeson).
Cyrtodonta dignus (Sardeson).
Cyrtodonta finitimus (Sardeson).
Leperditia sublævis (Shumard). (Joachim Is.)
Modiolopsis affinis Sardeson.
Modiolopsis contigua Sardeson.
Modiolopsis fountainensis Sardeson.
Modiolopsis gregalis Sardeson.
Modiolopsis litoralis Sardeson.
Modiolopsis postica Sardeson.
Ophileta fausta Sardeson.
Orthoceras minnesotense Sardeson.
Platyceras vetulum Sardeson.
Pleurotomaria aiens Sardeson.
Psiloconcha senecta (Sardeson).
Rauffella? fucoida Sardeson.
Scolithus minnesotensis James.
Vanuxemia fragosa (Sardeson).

CHAZYAN OF CHAMPLAIN AND OTTAWA VALLEYS.

(Day Point=D.; Crown Point=C.; Valcour=V.; Aylmer=A.)

Ambonychia? curvata Raymond. (D.,C.)
Amphilichas minganensis (Billings). (D.,V.,C.)
Ampyx (*Lonchodomas*) *halli* (Billings). (C.)
Archæocrinus? delicatulus Hudson. (V.)
Archinacella deformata (Hall). (D.,V.)
Archinacella propria Raymond. (C.,D.)
Barrandeoceras natator (Billings). (V.)
Basilicus marginalis (Hall). (D.,C.)
Bathyurellus brevispinus Raymond. (D.)
Bathyurellus minor Raymond. (C.)
Blastoidocrinus carchariædens Billings. (V.)
Bucania sulcatina (Emmons). (D.,V.)
Bumastus erastusi (Raymond). (C.,V.)
Bumastus globosus (Billings). (D.,V.)
Bumastus limbatus Raymond. (V.)
Buthotrephis antiquata Hall.
Camarella longirostris Billings. (D.,V.)
Camarella varians Billings. (C.,V.)
Camarotœchia major Raymond. (V.)
Camarotœchia orientalis (Billings). (A.)
Camarotœchia plena Hall. (A.,V.)
Camarotœchia pristina Raymond. (C.,V.)
Cameroceras curvatum Ruedemann. (V.)
Cameroceras tenuiseptum (Hall). (D.,V.)
Cameroceras velox (Billings). (A.)
Canadocystis barrandi (Billings). (A.)
Canadocystis emmonsi (Hudson). (C.,V.)
Carabocrinus geometricus Hudson. (V.;
Ceratocephala narrawayi Raymond. (C.)
Ceraurus granulosus Raymond and Barton. (C.)
Ceraurus hudsoni Raymond. (C.)
Chasmatopora gracilis (Hall).
Chasmatopora incepta (Hall).
Cheirocrinus forbesi (Billings). (A.)
Cleiocrinus perforatus (Hudson). (V.)
Clidophorus obscurus Raymond. (C.)
Clionychia marginalis Raymond. (D.)
Clionychia mytiloides (Hall).
Clitambonites multicostus (Hudson). (V.)
Clitambonites porcia (Billings). (A.)
Clisospira bassleri Raymond. (D?.)
Conocardium beecheri Raymond. (V.)
Conularia triangulata Raymond. (V.)
Cryptozoon perkinsi Seely.
Ctenodonta bidorsata Raymond. (C.)
Ctenodonta dubiaformis Raymond. (C.)
Ctenodonta parvidens Raymond. (A.)
Cybeloides primus (Raymond). (D., C.)
Cycloceras? rectiannulatum (Hall).
Cyrtactinoceras boycii (Whitfield). (C., V.)
Cyrtactinoceras champlainense Ruedemann. (V.)
Cyrtoceras mccoyi Billings.
Cyrtodonta janesvillensis Ulrich. (V.)
Cyrtodonta scala Raymond. (C.)
Cyrtodonta solitaria Raymond. (C.)
Cyrtospira raymondi (Hudson). (C., V.)
Deltoceras vaningeni Ruedemann. (C.)
Deocrinus asperatus (Billings). (A.)
Diaphorostoma auriforme (Hall).
Dinorthis (*Plæsiomys*) *platys* (Billings). (C.)
Dinorthis (*Valcourea*) *strophomenoides* (Raymond). (C.)
Eccyliomphalus fredericus Raymond. (C.)
Eccyliomphalus kalmi (Raymond). (C.)
Eccyliomphalus proclivis (Raymond). (C.)
Eccyliopterus vagrans (Raymond). (C.)
Endoceras(?) hudsoni Ruedemann. (V.)
Endoceras magister Ruedemann. (V.)
Endodesma transceps (Raymond). (C.)
Eoharpes antiquatus (Billings). (D., C.)
Eoharpes ottawaensis (Billings). (D.)
Eotomaria obsoleta Raymond. (D., C.)
Eurychilina latimarginata (Raymond). (D. C. V.)
Fletcheria incerta (Billings).
Geisonoceras shumardi (Billings). (D. C.)
Girvanella atrata (Seely). (C.)
Girvanella brainerdi (Seely). (C.)
Girvanella ocellata (Seely). (C.)

Girvanella prunus (Seely). (C.)
Glaphurus pustulatus (Walcott). (C., D.)
Gonioceras chaziense Ruedemann. (C.)
Gyronema historicum (Hudson). (V.)
Gyronema leptonotum (Raymond). (D.)
Gyronema microclathratum (Hudson). (V.)
Gyronema? rotalineum Raymond. (C.)
Hebertella borealis (Billings). (A., V.)
Hebertella imperator (Billings). (A.)
Hebertella vulgaris Raymond. (C., V., A.)
Hercocrinus elegans Hudson. (V.)
Hercocrinus ornatus Hudson. (V.)
Holopea harpa Hudson. (V.)
Holopea? plauta Raymond. (C.)
Holopea scrutator Raymond. (D., C.)
Hormotoma infrequens (Billings). (A.)
Hybocrinus pristinus Billings. (A.)
Illænus punctatus Raymond. (C., V.)
Isoteloides angusticaudus (Raymond). (C., V.)
Isotelus arenicola Raymond. (A.)
Isotelus beta Raymond. (C., V.)
Isotelus canalis Hall.
Isotelus harrisi Raymond. (C., V.)
Isotelus platymarginatus Raymond. (C. V.)
Leperditia canadensis labrosa Jones. (A.)
Leperditia limatula Raymond. (C.)
Leperditia nana (Jones). ?Chazyan.
Leptæna incrassata Hall. (C., V.)
Lingula (*Palæoglossa*) *belli* (Billings). (A., V.)
Lingula brainerdi Raymond. (D., C.)
Lingula columba Raymond. (D., C., V.)
Lingula lyelli Billings. (A.)
Lophospira billingsi Raymond. (A.)
Lophospira perangulata (Hall).
Lophospira rectistriata Raymond. (D., C.)
Lophospira seelyi Raymond. (V.)
Loxoceras moniliforme (Hall). (C., V.)
Lyriocrinus beecheri Hudson. (V.)
Maclurites magnus Lesueur. (C.)
Malocystites murchisoni Billings.
Modiolopsis fabæformis Raymond. (A., V.)
Modiolopsis parviuscula Billings. (A.)
Modiolopsis sowteri Raymond. (A.)
Modiolopsis subquadrilateralis Hudson. (V.)
Monticulipora? insularis Seely.
Nanno noveboracum Ruedemann. (V.)
Nieszkowskia billingsi (Raymond). (V.)
Nieszkowskia glaucus (Billings). Chazyan?
Nieszkowskia mars (Hudson). (V.)
Nieszkowskia satyrus (Billings). (V.)
Nileus perkinsi (Raymond). (V.)
Onchometopus obtusus (Hall). (D., C., V.)
Oncoceras pristinum Ruedemann. (V.)
Ooceras(?) lativentrum Ruedemann. (V.)
Ooceras(?) perkinsi Ruedemann. (V.)
Ooceras seelyi Ruedemann. (V.)
Orthidium lamellosum Raymond. (C., V.)
Orthis(?) acuminata Billings. (A.)
Orthis acutiplicata Raymond. (D.)
Orthis costalis Hall. (Middle Chazyan or Black River.)
Orthis ignicula Raymond. (C.)
Orthoceras antenor Billings.
Orthoceras lentum Ruedemann. (V.)
Orthoceras modestum Ruedemann. (V.)
Orthoceras progressum Ruedemann. (V.)
Orthoceras(?) vagum Ruedemann. (V.)
Oxydiscus catilloides (Raymond).. (C.)
Pachyocrinus crassibasalis Billings. (A.)
Palæacmæa irregularis Raymond. (D.)
Palæocrinus chapmani (Billings). (A.)
Palæocrinus striatus Billings. (A.)
Palæocystites dawsoni Billings. (A.)
Palæocystites tenuiradiatus (Hall).
Plectoceras jason (Billings). (C.)
Plectorthis exfoliata (Raymond). (D.)
Plethospira hyale (Billings). (Chazyan or Black River.)
Pleurotomaria antiquata Hall.
Prioniodus radicans Hinde.
Proetus clelandi Raymond. (C.)
Pterygometopus annulatus Raymond. (D. C,.)
Pseudosphærexochus approximus Raymond. (C.)
Pseudosphærexochus chazyensis Raymond. (C.)
Rafinesquina distans Raymond. (C., V.)
Rafinesquina incrassata (Hall). (C.)
Raphistoma immaturum (Billings). (D., A.)
Raphistoma stamineum (Hall). (D., C., V.)
Raphistoma striatum (Emmons). (D., C., V., A.)
Raphistomina undulata Raymond. (C.)
Remopleurides canadensis Billings. (C.)
Rhaphanocrinus gemmeus Hudson. (V.)
Rhinidictya fenestrata (Hall).
Rusophycus grenvillense Billings.
Scalites angulatus Emmons. (D.)
Scenella montrealensis (Billings). (D., C., V.)
Scenella pretensa Raymond. (D.)
Scenella robusta Raymond. (C.)
Schizambon duplicimuratus Hudson. (V.)
Schmidtella crassimarginata Ulrich. (V.)
Serpulites splendens Billings. (A.)
Sphærexochus parvus Billings. (C.)
Sphærocorphye goodnovi Raymond. (C.)
Spyroceras clintoni (Miller). (D., C., V.)
Spyroceras maro (Billings). (M.)
Stictopora? glomerata Hall.
Stromatocerium eatoni Seely. (C., V.)
Stromatocerium lamottense Seely. (C., V.)
Stromatocerium lamottense chazianum Seely. (C.,V.)
Stromatocerium? moniliferum Seely. (C., V.)
Strophomena prisca Raymond. (D.)
Stylaræa parva (Billings).
Subulites prolongatus Raymond. (C.)
Tarphyceras multicameratum Ruedemann. (V.)
Thaleops arcturus (Hall). (D., C., V.)
Trigyra ulrichi Raymond. (D.)
Trochonema (*Eunema*) *altisulcatum* (Hudson). (V.)
Trochonema biangulatum (Hall). (D.)
Trochonema dispar Raymond. (C., V.)
Trochonema (*Eunema*) *epitome* (Hudson). (V.)
Trochonema hudsoni Raymond. (C.)
Trochonema rectangulare Raymond. (D.)
Tryblidium eubule (Billings).
Vaginoceras oppletum Ruedemann. (D., V.)
Vanuxemia limbata (Raymond). (C.)
Vanuxemia montrealensis Billings.
Vogdesia bearsi Raymond. (C.)
Whiteavesia expansa Raymond. (C.)
Whiteavesia? undata Raymond. (C.)
Zygospira(?) acutirostris Hall. (D., C., V.)

CHAZYAN (LENOIR) OF VIRGINIA AND TENNESSEE.

Bucania sulcatina Emmons.
Bumastus globosus (Billings).
Camarella longirostris Billings.
Camarella varians Billings.

Dinorthis (*Plaesiomys*) *platys* (Billings).
Dinorthis strophomenoides Raymond.
Eurychilina latimarginata (Raymond).
Hebertella borealis (Billings).
Hebertella vulgaris Raymond.
Holopea scrutator Raymond.
Illænus globosus (Billings).
Leperditia limatula Raymond.
Lophospira? knoxvillensis Ulrich.
Maclurites knoxvillensis (Ulrich).
Maclurites magnus Lesueur.
Rafinesquina champlainensis Raymond.
Rafinesquina incrassata (Hall).
Raphistoma staminea (Hall).
Scenella pretensa Raymond.
Scenella robusta Raymond.
Stylaræa parva (Billings).
Zittelella varians (Billings).

CHAZYAN (STONES RIVER) OF APPALACHIAN AND MISSISSIPPI VALLEYS.

(Murfreesboro=M.; Pierce=P.; Ridley=R.; Lebanon=L.; Pamelia=Pa.)

Bathyurus acutus Raymond. (Pa.)
Batostoma libana (Safford). (L.)
Ceraurinus scofieldi (Clarke). (L.)
Chasmatopora sublaxa (Ulrich). (L., P.)
Cleiocrinus tessellatus (Troost). (L.)
Columnaria alveolata Goldfuss. (L.)
Corynotrypa delicatula (James). (P., L.)
Corynotrypa tennesseensis Bassler. (P.)
Ctenobolbina subcrassa Ulrich. (R.)
Ctenodonta gibberula Salter. (M.)
Cyclonema (?*Gyronema*) *præciptum* Ulrich. (M.)
Cyrtoceras? stonense Safford. (M.)
Cyrtodonta breviuscula Billings. (Pa.)
Cyrtospira tortilis Ulrich. (M.)
Dinorthis deflecta (Conrad).
Drepanella ampla Ulrich. (?R.)
Drepanella elongata Ulrich. (L.
Drepanella macra Ulrich. (L.)
Eccyliomphalus contiguus Ulrich.
Ectomaria prisca extenuata Ulrich. (M.
Eotomaria canalifera Ulrich. (M.)
Eotomaria labiosa Ulrich. (M.)
Escharopora briareus (Ulrich). (L.)
Escharopora libana (Safford). (L.)
Escharopora ramosa (Ulrich). (L.)
Eurychilina æqualis Ulrich. (?R.)
Eurychilina granosa Ulrich. (R.)
Eurychilina subradiata Ulrich.
Helicotoma declivis Ulrich. (M.)
Helicotoma subquadrata Ulrich. (M.)
Helicotoma tennesseensis Ulrich and Scofield. (M.)
Helicotoma whiteavesiana Raymond. (Pa.)
Helopora spiniformis (Ulrich). (L.)
Hudsonaster narrawayi (Hudson). (L.)
Isochilina? clavigera (Jones). (Pa.)
Isochilina clavigera clavifracta (Jones). (Pa.)
Leperditella æquilatera (Ulrich). (R.)
Leperditella inflata (Ulrich). (R.)
Leperditella? labellosa (Jones). (Pa.)
Leperditella mundula (Ulrich). (R.)
Leperditia amygdalina Jones. (Pa.)
Leperditia balthica primaeva Jones. (Pa.)
Leperditia fabulites (Conrad).
Liospira abrupta Ulrich and Scofield. (M.)
Liospira americana (Billings).
Liospira convexa Ulrich and Scofield. (R.)
Liospira decipiens Ulrich. (M.)
Liospira docens (Billings). (Pa.)
Liospira progne (Billings).
Liospira subconcava Ulrich. (M.)
Lophospira bicincta (Hall).
Lophospira centralis Ulrich. (M.)
Lophospira procera Ulrich. (M.)
Lophospira(?) *trochonemoides* Ulrich. (M.)
Maclurites magnus Lesueur.
Maclurites nitidus (Ulrich and Scofield). (M.)
Mitoclema cinctosum Ulrich. (R.)
Modiolopsis(?) *consimilis* Ulrich. (M.)
Nanno kingstonensis Whiteaves. (Pa.)
Nicholsonella pulchra Ulrich. (P.)
Ophiletina sublaxa depressa Ulrich and Scofield. (M.)
Orbignyella sublamellosa Ulrich and Bassler. (P.)
Orthis tricenaria Conrad.
Palæocrinus sulcatus Safford. (P.)
Phragmolites grandis (Ulrich). (L.)
Pianodema stonensis (Safford). (P.)
Pianodema subequata (Conrad).
Plectoceras bondi (Safford). (M.)
Protorhyncha ridleyana (Safford). (P., R.)
Pterotheca saffordi (Hall). (L.)
Pterygometopus troosti (Safford).
Raphistomina modesta Ulrich. (M.)
Rhinidictya basalis (Ulrich). (L.)
Rhinidictya nashvillensis (Miller). (P.)
Rhinidictya trentonensis (Ulrich). (L.)
Salterella billingsi Safford. (M.)
Solenopora compacta (Billings). (L.)
Strophomena incurvata (Shepard).
Tetradium syringoporoides Ulrich.
Tetranota bidorsata (Hall). (M.)
Tetranota sexcarinata Ulrich and Scofield. (L.)
Trochonema bellulum Ulrich. (M.)
Trochonema eccentricum Ulrich. (L.)
Trochonema umbilicatum latum Ulrich. (L.)
Whiteavesia saffordi (Ulrich). (M.)
Zygospira saffordi Winchell and Schuchert. (L.)

CHAZYAN (OTTOSEE) OF APPALACHIAN VALLEY I VIRGINIA AND TENNESSEE.

Archæocrinus knoxensis Miller and Gurley.
Archæocrinus parvus Miller and Gurley.
Archæocrinus peculiaris Miller and Gurley.
Batostoma sevieri Bassler.
Cheirocrinus angulatus (Wood).
Corynotrypa barberi Bassler.
Diabolocrinus asperatus (Miller and Gurley).
Diabolocrinus perplexus Wachsmuth and Springer.
Diabolocrinus vesperalis (White).
Echinosphærites aurantium (Gyllenhal).
Mitrocrinus wetherbyi Miller and Gurley.
Orthis(?) *holstoni* Safford.
Orthis(?) *saffordi* Hall and Clarke.
Pachydictya robusta Ulrich.
Platycystites faberi Miller.
Receptaculites biconstrictus Ulrich.
Scenellopora radiata Ulrich.

CHAZYAN (NORMANSKILL, ETC.) OF APPALACHIAN VALLEY, ARKANSAS, AND OKLAHOMA.

(Normanskill=N.; Athens=A.; Stringtown=S.)

Amphigraptus divergens (Hall). (N.)
Amphigraptus multifasciatus (Hall). (N.)
Ampyx americanus Safford and Voydes. (A.)
Azygograptus? simplex Ruedemann. (N.)
Azygograptus? walcotti Lapworth. (N.)
Climacograptus antiquus Lapworth. (N.)
Climacograptus bicornis (Hall). (N., S.)
Climacograptus modestus Ruedemann. (N., S.)
Climacograptus parvus Hall. (N.)
Climacograptus (*Mesograptus*) *putillus eximius* Ruedemann. (N.)
Climacograptus scharenbergi Lapworth. (N., A.)
Corynoides calicularis Nicholson. (N.)
Corynoides gracilis perungulatus Ruedemann. (N.)
Cryptograptus tricornis (Carruthers). (N., A., S.)
Desmograptus tenuiramosus Ruedemann. (N.)
Dicellograptus divaricatus (Hall). (N.)
Dicellograptus divaricatus bicurvatus Ruedemann. (N., S.)
Dicellograptus divaricatus rectus Ruedemann. (N.)
Dicellograptus divaricatus rigidus Lapworth. (S.)
Dicellograptus divaricatus salopiensis Elles and Wood. (N.)
Dicellograptus gurleyi Lapworth. (N., S.)
Dicellograptus intortus Lapworth. (N., S.)
Dicellograptus mensurans Ruedemann. (N., A.)
Dicellograptus moffatensis alabamensis Ruedemann. (A.)
Dicellograptus sextans (Hall). (N., S.)
Dicellograptus sextans exilis Elles and Wood. (N.)
Dicellograptus sextans perexilis Ruedemann. (N.)
Dicellograptus sextans tortus Ruedemann. (N.)
Dicellograptus smithi Ruedemann. (A.)
Dicranograptus contortus Ruedemann. (N.)
Dicranograptus furcatus (Hall). (N.)
Dicranograptus furcatus exilis Ruedemann. (N.)
Dicranograptus nicholsoni diapason Gurley. (N., S.)
Dicranograptus nicholsoni parvangulus Gurley. (N., S.)
Dicranograptus nicholsoni whitianus Miller. (N.)
Dicranograptus ramosus (Hall). (N.)
Dicranograptus ramosus arkansasensis (Gurley). (S.)
Dicranograptus rectus Hopkinson. (S.)
Dicranograptus spinifer (Lapworth) Elles ard Wood (N.)
Dictyonema obovatum Gurley. (S.)
Dictyonema spiniferum Ruedemann. (N.)
Didymograptus sagitticaulis Gurley. (N., A., S.)
Didymograptus serratulus (Hall). (N.)
Didymograptus serratulus juvenalis Ruedemann. (N.)
Didymograptus subtenuis (Hall). (N.)
Didymograptus superectes Lapworth. (S.)
Diplograptus acutus (Elles and Wood). (S.)
Diplograptus (*Glyptograptus*) *angustifolius* (Hall). (N., A., S.)
Diplograptus basilicus (Elles and Wood). (S.)
Diplograptus foliaceus (Murchison). (N.)
Diplograptus foliaceus acutus Lapworth. (N.)
Diplograptus foliaceus alabamensis Ruedemann. (A.)
Diplograptus foliaceus incisus Lapworth. (N.)
Diplograptus foliaceus trifidus Gurley. (N.)
Diplograptus vespertinus (Ruedemann). (N.)
Dolichopterus breviceps Clarke and Ruedemann. (N.)
Eurypterus chadwicki Clarke and Ruedemann. (N.)
Eusarcus lingulatus Clarke and Ruedemann. (N.)
Glossograptus ciliatus Emmons. (N., A., S.)
Glossograptus ciliatus debilis Ruedemann. (N.)
Glossograptus whitfieldi (Hall). (N., A., S.)
Graptospongia pusilla Ruedemann. (N.)
Lasiograptus bimucronatus (Nicholson). (N., S.)
Lasiograptus mucronatus (Hall). (N., S.)
Leptobolus walcotti Ruedemann. (N., A., S.)
Leptograptus flaccidus spinifer Elles and Wood. (N.)
Leptograptus flaccidus trentonensis Ruedemann. (N.)
Nemagraptus exilis (Lapworth). (N.)
Nemagraptus exilis linearis Ruedemann. (N.)
Nemagraptus gracilis (Hall). (N., A., S.)
Nemagraptus gracilis approximatus Ruedemann. (N.)
Nemagraptus gracilis crassicaulis (Gurley). (N.)
Nemagraptus gracilis distans Ruedemann. (N.)
Nemagraptus gracilis surcularis (Hall). (N.)
Odontocaulis hepaticus Ruedemann. (N., S.)
Paterula amii Schuchert. (N.)
Protovirgularia dichotoma McCoy. (N.)
Pterygotus (*Eusarcus?*) *nasutus* Clarke and Ruedemann. (N.)
Pterygotus normanskillensis Clarke and Ruedemann. (N.)
Ptilograptus poctai Ruedemann. (N.)
Retiograptus geintzianus Hall. (N., A., S.)
Rhombodictyon discum Whitfield. (N.)
Rhombodictyon reniforme Whitfield. (N.)
Rhombodictyon reniforme rhombiforme Whitfield. (N.)
Schizotreta papilliformis Ruedemann. (N.)
Stylonurus modestus Clarke and Ruedemann. (N.)
Syndyograptus pecten Ruedemann. (N.)
Thamnograptus capillaris (Emmons). (N., A., S.)

CHAZYAN (MINGAN) OF MINGAN ISLANDS, QUEBEC.

Barrandeoceras minganense Hyatt.
Barrandeoceras natator (Billings).
Bathyurellus brevispinus Raymond.
Batostoma varium Ulrich.
Bumastus erastusi (Raymond).
Bumastus globosus (Billings).
Calathium canadense Billings.
Camarella longirostris Billings.
Camarella varians Billings.
Camarotœchia orientalis (Billings)
Cameroceras velox (Billings).
Ceraurinus pompilius (Billings).
Chasmatopora aspera (Hall).
Chasmatopora sublaxa (Ulrich).
Cœlocaulus linearis (Billings).
Conocardium beecheri Raymond.
Cyrtoceras subturbinatum Billings.
Eccyliomphalus fredericus Raymond.
Ectomaria prisca (Billings).
Eoharpes antiquatus (Billings).
Eospongia roemeri Billings.

Euconia amphitrite (Billings).
Geisonoceras shumardi (Billings).
Helicotoma perstriata Billings.
Illænus bayfieldi Billings.
Illænus conifrons (Billings).
Leptæna incrassata Hall.
Lophospira aspera (Billings).
Loxoceras diffidens (Billings).
Maclurites atlanticus (Billings).
Modiolopsis parviuscula Billings.
Orthis(?) piger Billings.
Orthoceras cornuum Billings.
Orthoceras mingunense Billings.
Palæocystites pulcher Billings.
Plectoceras jason (Billings).
Plectoceras tyrans (Billings).
Pleurotomaria abrupta Billings.
Pliomerops canadensis (Billings).
Schizambon duplicimuratus Hudson.
Thaleops clavifrons (Billings).
Thaleops vindex (Billings).
Zittelella varians (Billings).

CHAZYAN (QUEBEC) OF NEWFOUNDLAND.

(Divisions I-M and N-P in part; I may be in part Canadian.)

Actinoceras clouei (Barrande).
Agnostus fabius Billings. (N., P.)
Amphilichas jukesi (Billings). (P.)
Ampyx (Lonchodomas) læviusculus (Billings). (N.)
Ampyx (Lonchodomas) normalis (Billings). (N., P.)
Ampyx (Lonchodomas) rutilius (Billings). (P.)
Ampyx (Lonchodomas) semicostatus (Billings). (N., P.)
Archinacella instabilis (Billings). (L.)
Arthrorachis galba (Billings). (M., N., P.)
Asaphus(?) quadraticaudatus Billings. (N., P.)
Basilicus huttoni (Billings). (N., P.)
Bathyurellus formosus Billings. (P.)
Bathyurellus fraternus Billings. (P.)
Bathyurellus nitidus Billings. (P.)
Bathyurellus validus Billings. (L.)
Bathyurus perplexus Billings.
Bathyurus vetulus Billings.
Beyrichia atlantica Billings. (L., M.)
Calathium fittoni Billings. (K.)
Camarella parva Billings. (N., P.)
Camarella varians Billings. (N., P.)
Ceraurinus polydorus (Billings). (N.)
Ctenodonta angela Billings. (M.)
Cybeloides mirus (Billings). (N., P.)
Eccyliomphalus distans (Billings). (P.)
Eccyliomphalus superbus (Billings). (P.)
Endoceras atlanticus (Barrande).
Endoceras insulare (Barrande).
Fusispira daphne (Billings). (L.)
Harpides atlanticus Billings. (P.)
Harpides concentricus Billings. (P.)
Helicotoma eucharis Billings. (L., M.)
Heliomera sol (Billings). (N., P.)
Holopea ophelia Billings. (L.)
Hormotoma simulatrix (Billings). (H., N.)
Illænus arcuatus Billings. (P.)
Illænus consimilis Billings. (L., M., N.)
Illænus consobrinus Billings. (P.)
Illænus fraternus Billings. (L., N., P.)
Illænus tumidifrons Billings. (P.)
Leiostegium breviceps (Billings). (N.)
Leperditia concinnula Billings. (L., M.)
Leperditia ventralis Billings. (N.)
Lingula nympha Billings. (N.)
Lingulella iole (Billings). (P.)
Litoceras? insolens (Billings). (L.)
Lituites?? pluto Billings. (L.)
Lophospira augustina (Billings). (H., N.)
Lophospira cicelia (Billings). (L.)
Lophospira sororcula (Billings). (H., M.)
Loxoceras allumettense (Billings). (M., N.)
Maclurites crenulatus (Billings). (L., N.)
Maclurites emmonsi (Billings). (L., N.)
Maclurites ponderosus (Billings). (P.)
Maclurites transitionis (Billings). (K., L.)
Murchisonia?? catharina Billings. (K.)
Nautilus? desertus Billings. (L.)
Nieszkowskia perforator (Billings). (N.)
Nileus macrops Billings (N.)
Nileus scrutator Billings. (N., P.)
Obolus cyane (Billings). (P.)
Orthis? delicatula Billings. (N., P.)
Orthoceras flavius Billings. (I.)
Orthoceras hæsitans Billings. (I.)
Orthoceras piscator Billings. (I., N.)
Orthoceras priamus Billings. (L., M.)
Pleurotomaria (Eotomaria) selecta Billings. (H., I., K., L.)
Pleurotomaria sponsa Billings. (N., P.)
Pleurotomaria virgo Billings. (H., I., K., L.)
Pleurotomaria virguncula Billings. (H., I., K., L.)
Pliomerops barrandei (Billings). (I., K., N., P.)
Pliomerops julius (Billings). (P.)
Pseudosphærexochus mercurius (Billings). (P.)
Pseudosphærexochus vulcanus (Billings). (P.)
Rafinesquina aurora (Billings). (K., N., P.)
Remopleurides panderi Billings. (N.)
Remopleurides schlotheimi Billings. (N., P.)
Rhynchonella(?) corinthia Billings. (N.)
Solenopora compacta (Billings). (L.)
Strophomena(?) imbecilis Billings. (P.)
Telephus americanus Billings. (N., P.)
Triarthrus fischeri Billings. (N., P.)
Tripteroceras servile (Billings). (L.)
Urasterella huxleyi (Billings). (I.)

BLACK RIVER OF APPALACHIAN AND MISSISSIPPI VALLEYS AND CANADA.

(L.=Lowville; W.=Watertown; D.=Decorah; P.=Platteville; A.=Auburn; K.=Kimmswick; Le.=Leray; H.=Harding.)

Actinoceras beloitense (Whitfield) (P.)
Actinoceras bigsbyi Bronn. (P., D., L.)
Actinoceras gracile (Hall). (W.)
Actinoceras remotiseptum (Hall). (P., W.)
Actinoceras tenuifilum (Hall). (W., L.)
Actinoceras tenuifilum distans (Hall). (W.)
Actinostroma? trentonense Ulrich and Everett. (P.)
Ambonychia planistriata Hall. (P.)
Anolotichia impolita (Ulrich). (D.)
Anthaspidella firma Ulrich and Everett. (P.)
Anthaspidella florifera Ulrich and Everett. (P.)
Anthaspidella grandis Ulrich and Everett. (P.)
Anthaspidella? magnifica Ulrich and Everett. (P.)
Anthaspidella mammulata Ulrich and Everett. (P.)
Anthaspidella obliqua Ulrich and Everett. (P.)
Anthaspidella parvistellata Ulrich and Everett. (P.)

Anthaspidella scutula Ulrich and Everett. (P.)
Aparchites arrectus Ulrich. (D.)
Aparchites chatfieldensis Ulrich. (D.)
Aparchites concinnus Jones. (Le.)
Aparchites ellipticus Ulrich. (D.)
Aparchites granilabiatus neglectus Ulrich. (D.)
Aparchites millepunctatus (Ulrich). (D.)
Aparchites minutissimus trentonensis Ulrich. (D.)
Archinacella billingsi (Walcott). (L.)
Archinacella clochensis Foerste. (L.)
Archinacella deleta (Sardeson). (D.)
Archinacella depressa Ulrich and Scofield. (P.)
Archinacella instabilis incurva Ulrich and Scofield. (P.)
Archinacella patelliformis (Hall). (L., A:, D.)
Archinacella perovalis (Whitfield). (P.)
Archinacella powersi Ulrich and Scofield. (P.)
Archinacella simulatrix Ulrich and Scofield. (D.)
Archinacella subrotunda Ulrich and Scofield. (D.)
Aristerella nitidula Ulrich. (D.)
Arthroclema cornutum Ulrich. (D.)
Arthroclema pulchellum Billings. (D.)
Arthroclema striatum Ulrich. (D.)
Arthropora bifurcata Ulrich. (D.)
Arthropora simplex Ulrich. (P., D.)
Arthrostylus conjunctus Ulrich. (D.)
Arthrostylus obliquus Ulrich. (D.)
Aspidopora parasitica (Ulrich). (D.)
Astrapis desiderata Walcott. (H.)
Atactoporella insueta Ulrich. (D.)
Atactoporella ramosa Ulrich. (D.)
Atactoporella typicalis præcipta Ulrich. (D.)
Aulopora(?) trentonensis Winchell and Schuchert. (D.)
Barrandeoceras americanum (D'Orbigny). (W.)
Barrandeoceras vagrans (Billings). (Le.)
Basilicus barrandi (Hall). (L., P.)
Basilicus? vetustus (Hall). (L.)
Bathyurus extans (Hall). (L., P.)
Bathyurus johnstoni Raymond. (L.)
Bathyurus longispinus Walcott. (L.)
Bathyurus schucherti Clarke. (P.)
Bathyurus spiniger (Hall). (L., P., A.)
Bathyurus superbus Raymond.
Batostoma canadense (Foord). (L.)
Batostoma? decipiens Ulrich. (D.)
Batostoma fertile Ulrich. (D.)
Batostoma fertile circulare Ulrich. (D.)
Batostoma magnopora Ulrich. (D.)
Batostoma minnesotense Ulrich. (D.)
Batostoma montuosum Ulrich. (D.)
Batostoma varium Ulrich. (D.)
Batostoma winchelli nodosum Ulrich. (D.)
Bellerophon charon Billings. (Le.)
Bellerophon subglobosus Ulrich. (L., Le.)
Berenicea minnesotensis Ulrich. (D.)
Bucania emmonsi Ulrich and Scofield. (P., D.)
Bucania halli Ulrich and Scofield. (P., D., L., A., Le.)
Bucania minnesotensis Ulrich and Scofield. (P.)
Bucania sublata Ulrich and Scofield. (P., D.)
Bumastus indeterminatus (Walcott). (L., P.)
Bumastus milleri (Billings). (L.)
Buthograptus laxus Hall. (P.)
Bythocypris(?) curta Ulrich. (D.)
Bythocypris granti Ulrich. (D.)
Bythocypris (?) robusta Ulrich. (P.)
Bythopora alcicornis Ulrich. (D.
Bythopora herricki (Ulrich). (D.)
Bythopora subgracilis (Ulrich). (D.)
Calapœcia anticostiensis Billings.
Calathium (? Zittelella) infelix Ulrich and Everett. (P.)
Callithamnopsis delicatula Ruedemann. (L.)
Callithamnopsis fruticosa Whitfield. (P.)
Camarella panderi Billings. (Le.)
Camarella volborthi Billings. (Le.)
Camarocladia dichotoma Ulrich and Everett. (P.)
Camarocladia rugosa Ulrich. (D.)
Camerella inornata Weller (New Jersey.)
Carabocrinus dicyclicus (Sardeson). (D.)
Carinaropsis acuta Ulrich and Scofield. (D., A.)
Carinaropsis minima Ulrich and Scofield. (S.)
Carinaropsis phalera (Sardeson). (D., A.)
Cataschisma typa Branson. (A.)
Ceramophylla frondosa Ulrich. (D.)
Ceramoporella distincta Ulrich. (D.)
Ceramoporella granulosa minor Bassler. (D.)
Ceramoporella inclusa Ulrich. (D.)
Ceratopsis chambersi (Miller). (D.)
Ceraurinus scofieldi (Clarke). (P.)
Ceraurus bispinosus Raymond and Barton. (L.)
Ceraurus pleurexanthemus Green. (P., D., A.)
Chætocladus plumula Whitfield. (P.)
Chætomorpha?? prima Whitfield. (P.)
Chasmatopora corticosa (Ulrich). (D.)
Chasmatopora reticulata (Hall). (D.)
Chasmatopora sublaxa (Ulrich). (P.)
Clathrospira conica Ulrich and Scofield. (D.)
Clathrospira convexa Ulrich and Scofield. (P.)
Clathrospira subconica (Hall). (P., L., D.)
Clinoceras mumiaforme (Whitfield). (P.)
Clionychia erecta (Hall). (P.)
Clionychia? gibbosa Whiteaves. (L.)
Clionychia lamellosa (Hall). (P.)
Clionychia nitida Ulrich. (P.)
Clionychia ottawensis Whiteaves. (L.)
Clionychia rhomboides (Ulrich). (P.)
Clisospira occidentalis Whitfield. (P.)
Cœloclema trentonensis (Ulrich). (D.)
Colpomya demissa Ulrich. (D.)
Columnaria alveolata discreta Foerste. (L.)
Columnaria carterensis Safford. (L.)
Columnaria halli Nicholson. (L.)
Comarocystites obconicus (Meek and Worthen). (K.)
Comarocystites shumardi Meek and Worthen. (K.)
Conocardium immaturus Billings. (Le.)
Corematocladus densa Ruedemann. (L.)
Corynotrypa delicatula (James). (P., L., D.)
Corynotrypa inflata (Hall). (D.)
Crania granulosa N. H. Winchell. (P.)
Crania granulosa cumberlandensis Foerste. (L.)
Crania setigera Hall. (D., P.)
Cremacrinus punctatus Ulrich. (D.)
Crepipora perampla Ulrich. (P.)
Crepipora subæquata Ulrich. (D.)
Cryptophragmus antiquatus Raymond. (L.)
Ctenobolbina crassa (Ulrich). (D.)
Ctenobolbina fulcrata Ulrich. (D.)
Ctenodonta abrupta Billings. (Le.)
Ctenodonta astartæformis Salter. (Le., D.)
Ctenodonta auburnensis Branson. (A.)
Ctenodonta candens (Sardeson). (D.)
Ctenodonta compressa (Ulrich). (D.)

Ctenodonta contracta Salter. (Le.)
Ctenodonta costata Branson. (A.)
Ctenodonta cuneiformis Ulrich. (D.)
Ctenodonta gibberula Salter. (Le., D., L., P.)
Ctenodonta hamburgensis (Walcott). (D.)
Ctenodonta inflata (Hall). (P.)
Ctenodonta jerseyensis Weller. (New Jersey.)
Ctenodonta logani Salter. (Le., P.)
Ctenodonta longa (Ulrich). (D.)
Ctenodonta medialis Ulrich. (D., A.)
Ctenodonta nasuta (Hall). (P. D., A., Le., L.)
Ctenodonta nasuta robusta Ulrich. (P.)
Ctenodonta nitida (Ulrich). (D.)
Ctenodonta ovata (Hall). (P.)
Ctenodonta oviformis Ulrich. (D., A.)
Ctenodonta planodorsata (Ulrich). (D.)
Ctenodonta scofieldi Ulrich. (D.)
Ctenodonta socialis Ulrich. (D.)
Cybeloides ella (Raymond and Narraway).
Cycloceras lesueuri (Clarke). (P.)
Cycloceras nicolleti (Clarke). (P.)
Cycloceras olorus (Hall). (P.)
Cyclocystoides anteceptus Hall.
Cyclonema hallianum Salter. (Le.)
Cyclora hoffmani Miller.
Cyclora minuta Hall.
Cyclora parvula (Hall).
Cylindrocœlia endoceroidea Ulrich. (L.)
Cylindrocœlia minnesotensis Ulrich. (D.)
Cyphotrypa informis (Ulrich). (D.)
Cyrtoceras camurum Hall. (P.)
Cyrtoceras dunleithense Miller and Gurley. (P.)
Cyrtoceras eugium Hall. (P.)
Cyrtoceras featherstonhaughi Clarke. (P.)
Cyrtoceras houghtoni Clarke. (P.)
Cyrtoceras macrostomum Hall. (P.)
Cyrtoceras norwoodi Clarke. (P.)
Cyrtoceras regulare Billings. (Le.)
Cyrtoceras scofieldi Clarke. (P.)
Cyrtoceras shumardi Clarke. (P.)
Cyrtoceras simplex Billings.
Cyrtoceras sinuatum Billings. (Le.)
Cyrtoceras tenuistriatum Hall. (P., D.)
Cyrtocerina(?) schoolcrafti Clarke. (D.)
Cyrtocerina typica Billings. (Le.)
Cyrtodonta affinis Ulrich. (D.)
Cyrtodonta ampla Ulrich. (P.)
Cyrtodonta billingsi Ulrich. (D., P., A.)
Cyrtodonta canadensis Billings. (L., Le.)
Cyrtodonta cingulata Ulrich. (D.)
Cyrtodonta clochensis Foerste. (L.)
Cyrtodonta glabella (Ulrich). (D., P.)
Cyrtodonta huronensis Billings. (L., D.)
Cyrtodonta janesvillensis Ulrich. (P.)
Cyrtodonta leucothea Billings. (Le.)
Cyrtodonta obesa Ulrich. (D.)
Cyrtodonta oviformis (Ulrich). (P.)
Cyrtodonta persimilis Ulrich. (P.)
Cyrtodonta rotulata Ulrich. (D.)
Cyrtodonta spinifera Billings. (Le.)
Cyrtodonta subcarinata Billings.
Cyrtodonta subovata Ulrich. (D., P.)
Cyrtodonta tenella (Ulrich). (D.)
Cyrtolites dilatatus Ulrich and Scofield. (D.)
Cyrtolites retrorsus fillmorensis Ulrich and Scofield. (D.)
Cyrtorizoceras isodorus (Billings). (L.)
Cyrtorizoceras minneapolis (Clarke). (P.)
Cyrtospira bicurvata Ulrich. (L.)
Cyrtospira parvula (Billings). (Le.)
Cytherella (?) *rugosa* (Jones). (Le., D.)
Cytherella (?) *subrotunda* Ulrich. (D.)
Dalmanella hamburgensis (Walcott). (D., L.)
Dalmanella rogata (Sardeson). (D.)
Dalmanella testudinaria Dalman. (D.)
Dekayella prænuntia Ulrich. (D.)
Dekayella prænuntia echinata Ulrich. (D.)
Dekayella prænuntia multipora Ulrich. (D.)
Dekayella prænuntia nævigera Ulrich. (D.)
Dekayia trentonensis Ulrich. (D.)
Dermatostroma tyronensis Foerste. (L.)
Dicranella bicornis Ulrich. (D.)
Dicranella marginata Ulrich. (D.)
Dicranella (?) *simplex* Ulrich. (D.)
Dicranella spinosa Ulrich. (D.)
Dictyonema neenah Hall. (P.)
Dictyorhabdus priscus Walcott. (H.)
Dilobella typa Ulrich. (D.)
Dinobolus canadensis (Billings). (Le.)
Dinobolus magnificus (Billings). (Le.)
Dinorthis deflecta (Conrad). (P., L.)
Dinorthis pectinella (Emmons). (D., Le.)
Dinorthis pectinella sweeneyi (N. H. Winchell). (D.)
Drepanella bigeneris Ulrich. (P.)
Drepanella crassinoda Ulrich. (L.)
Drepanella nitida (Ulrich). (L.)
Dystactospongia minor Ulrich and Everett. (L., P.)
Dystactospongia rudis Ulrich and Everett. (P.)
Eccyliomphalus undulatus (Hall). (P.)
Eccyliopterus beloitensis Ulrich and Scofield. (L., P.)
Echinosphærites aurantium (Gyllenhal). (L., K.)
Ectomaria pagoda (Salter). (Le., P., D.)
Ectomaria prisca (Billings). (Le., P., L.)
Edriospongia basalis Ulrich and Everett. (P.)
Eichwaldia subtrigonalis Billings. (Le.)
Encrinurus varicostatus Walcott. (P.)
Encrinurus varus (Walcott). (P.)
Encrinurus trentonensis Walcott.
Encrinurus vannulus Clarke. (P.)
Endoceras gemelliparum Hall.
Endoceras proteiforme Hall. (L., P., D.)
Endoceras rapax Billings.
Endoceras rottermundi (Barrande).
Endoceras subannulatum (Whitfield). (P.)
Endoceras subcentrale Hall. (W.)
Endoceras virgatum (Hall). (L.)
Endodesma gesneri (Billings).
Endodesma orthonotum (Meek and Worthen). (P.)
Endodesma undosum Ulrich. (P.)
Eoharpes pustulosus (Hall).
Eotomaria dryope (Billings). (D., P., A.)
Eotomaria supracingulata (Billings). (P., D.)
Eotomaria vicina Ulrich and Scofield. (P.)
Eridotrypa ædilis minor Ulrich. (D.)
Eriptychius americanus Walcott. (H.)
Escharopora angularis Ulrich. (D., P.)
Escharopora confluens Ulrich. (D.)
Escharopora? limitaris Ulrich. (D.)
Escharopora subrecta (Ulrich). (D.)
Eurychilina longula Ulrich. (L.)
Eurychilina obesa Ulrich. (L.)
Eurychilina reticulata Ulrich. (D., P.)
Eurychilina reticulata incurva Ulrich. (D.)
Eurychilina? subæquata Ulrich. (D.)
Eurychilina subradiata Ulrich. (D., P.)

Eurychilina symmetrica Ulrich. (D.)
Eurydictya calhounensis Ulrich. (K.)
Eurydictya multipora (Hall).
Eurymya plana (Hall). (P.)
Eurystomites robertsoni (Hall). (P.)
Favositella laxata (Ulrich). (D.)
Fusispira schucherti Ulrich and Scofield. (P.)
Fusispira (?) spicula Sardeson. (D.)
Gomphoceras powersi J. F. James. (P.)
Gonioceras anceps Hall. (P. W.)
Gonioceras occidentalis Hall. (P.)
Gyroceras duplicostatum Whitfield. (P.)
Gyronema duplicatum Ulrich and Scofield. (P.)
Gyronema liratum Ulrich and Scofield. (D.)
Gyronema pulchellum Ulrich and Scofield. (D.)
Gyronema semicarinatum (Salter). (L.)
Hallopora ampla (Ulrich). (D.)
Hallopora angularis (Ulrich). (D.)
Hallopora dumalis (Ulrich). (D.)
Hallopora incontroversa (Ulrich). (D.)
Hallopora multitabulata (Ulrich). (D.)
Hallopora pulchella (Ulrich). (D.)
Hallopora pulchella persimilis (Ulrich). (D.)
Halloporina crenulata (Ulrich). (D.)
Halloporina parva (Ulrich and Bassler). (D.)
Hebertella (Glyptorthis) bellarugosa (Conrad). (P. D.)
Helicotoma granosa Ulrich. (L.)
Helicotoma missouriensis Branson. (A.)
Helicotoma muricata (Salter). (Le.)
Helicotoma planulata Salter. (Le., L., D.)
Helicotoma planulata robusta Ulrich and Scofield. (P.)
Helicotoma planulatoides Ulrich. (L.)
Helicotoma? *spinosa* Salter. (Le.)
Helicotoma umbilicata (Ulrich and Scofield). (P.)
Helicotoma verticalis Ulrich. (L.)
Helopora alternata Ulrich. (D.)
Helopora divaricata Ulrich. (D.)
Hemiphragma irrasum (Ulrich). (D.)
Hemiphragma ottawaense (Foord). (L. D.)
Hindia inæqualis Ulrich and Everett. (P. D.)
Hindia parva Ulrich. (D. A.)
Holopea ampla (Ulrich and Scofield). (P.)
Holopea concinnula (Ulrich and Scofield). (P.)
Holopea insignis Ulrich and Scofield. (D. P. A.)
Holopea nereis Billings. (Le.)
Holopea pyrene Billings. (Le.)
Holopea rotunda Ulrich. (P.)
Holopea similis (Ulrich and Scofield). (D.)
Homotrypa? arbuscula Ulrich. (P. L.)
Homotrypa exilis Ulrich. (D.)
Homotrypa? *intercalaris* Ulrich. (D.)
Homotrypa minnesotensis Ulrich. (D.)
Homotrypa separata Ulrich. (D.)
Homotrypa subramosa Ulrich. (D.)
Homotrypa tuberculata Ulrich. (D.)
Homotrypella instabilis Ulrich. (D.)
Homotrypella multiporata Ulrich. (D.)
Homotrypella ovata Ulrich. (D.)
Hormotoma fasciata Branson. (A.)
Hormotoma gracilis (Hall). (D. L., P.)
Hormotoma gracilis angustata (Hall). (L., P.)
Hormotoma gracilis goodhuensis Ulrich and Scofield. (D.)
Hormotoma gracilis sublaxa (Ulrich and Scofield). (A.)
Hormotoma latiangularia Branson. (A.)
Hormotoma procris (Billings). (Le.)
Hormotoma salteri canadensis Ulrich. (Le.)
Hormotoma salteri tennesseensis Ulrich. (L.)
Hormotoma subangulata (Ulrich and Scofield). (D.)
Hudsonaster narrawayi (Hudson). (D., L.)
Hyolithes baconi Whitfield. (P.)
Illænus angusticollis Billings. (L., Le.)
Illænus conradi Billings. (Le.)
Illænus latiaxiatus Raymond and Narraway. (L.)
Isochilina armata (Walcott). (L.)
Isoteloides homalonotoides (Walcott). (L., P.)
Jovellania murrayi (Billings). (L.)
Klœdenia initialis (Ulrich). (D.)
Krausella arcuata Ulrich. (L., D.)
Krausella inæqualis Ulrich. (P., D.)
Leperditella canalis Ulrich. (P.)
Leperditella germana (Ulrich). (P.)
Leperditella macra Ulrich. (D.)
Leperditella persimilis Ulrich. (D.)
Leperditella sulcata (Ulrich). (L.)
Leperditella sulcata ventricosa Ulrich. (L.)
Leperditella tumida (Ulrich). (L.)
Leperditia canadensis pauquettiana Jones. (Le.)
Leperditia fabulites (Conrad). (P., L., D.)
Leptæna charlottæ Winchell and Schuchert. (D.)
Leptotrypa hexagonalis Ulrich. (P.)
Lichenaria typa Winchell and Schuchert. (D., A.)
Licrophycus hiltonense Billings.
Lingula clathrata Winchell and Schuchert. (D.)
Lingula clochensis Foerste. (L.)
Lingula elderi Whitfield. (P., D.)
Lingula eva Billings. (D.)
Lingula huronensis Billings.
Lingula kingstonensis Billings.
Lingula morsei (N. H. Winchell). (P.)
Lingula perryi Billings.
Lindströmia whiteavesi Foerste. (Le.)
Liospira americana Billings. (P., L., D.)
Liospira angulata Ulrich. (L., Le.)
Liospira angustata Ulrich and Scofield. (P.)
Liospira eugenia (Billings).
Liospira larvata (Salter). (Le.)
Liospira modesta Ulrich. (D.)
Liospira(?) mundula Ulrich. (Le.)
Liospira obtusa Ulrich and Scofield. (P.)
Liospira progne (Billings). (L.)
Liospira vitruvia (Billings). (P., L., D.)
Lophospira? arachne (Billings). (Le.)
Lophospira bicincta Hall. (P., D., L.)
Lophospira concinnula Ulrich and Scofield. (D.)
Lophospira conradana Ulrich and Scofield. (P.)
Lophospira helicteres (Salter). (Le.)
Lophospira helicteres wisconsinensis (Ulrich and Scofield). (P.)
Lophospira(?) notabilis Ulrich. (L., Le.)
Lophospira obliqua Ulrich. (D., L., A., Le.)
Lophospira oweni Ulrich and Scofield. (D., L., A., Le.)
Lophospira peracuta Ulrich and Scofield. (D.)
Lophospira perangulata (Hall). (D., L., P., A.)
Lophospira pulchella Ulrich and Scofield. (D.)
Lophospira serrulata (Salter). (P., L., Le.)
Lophospira spironema Ulrich and Scofield. (D.)
Lophospira tricarinata (Hall). (P.)
Lophospira ventricosa (Hall).
Loxoceras allumettense (Billings). (Le.)
Loxonema? murrayana Salter. (Le.)

Lyrodesma acuminatum Ulrich. (D.)
Lyrodesma acuminatum intermedium Ulrich. (D.)
Maclurites bigsbyi (Hall). (P.)
Maclurites bigsbyi dixonensis (Ulrich). (P.)
Maclurites depressus (Ulrich and Scofield). (P.)
Maclurites logani (Salter). (Le.)
Maclurites nitidus (Ulrich and Scofield). (P.)
Macrocypris? siliqua (Jones). (Le.)
Macronotella scofieldi Ulrich. (P., L.)
Mælonoceras falx (Billings). (Le.)
Mælonoceras neleus (Hall). (P.)
Mælonoceras præmaturum (Billings). (Le.)
Mastigograptus? flaccidus Ruedemann. (L.)
Matheria rugosa Ulrich. (D.)
Mesotrypa infida (Ulrich). (D.)
Mesotrypa? spinosa Ulrich. (D.)
Modiolodon(?) gibbus Ulrich. (D.)
Modiolodon subrhomboideus Branson. (A.)
Modiolopsis adrastia Billings.
Modiolopsis arguta Ulrich. (D.)
Modiolopsis chatfieldensis Ulrich. (D.)
Modiolopsis concava Ulrich. (D.)
Modiolopsis expansa Branson. (A.)
Modiolopsis nais Billings. (Le.)
Modiolopsis obsoleta Ulrich. (D.)
Modiolopsis obtusa (Hall). (L.)
Modiolopsis parviuscula Billings.
Modiolopsis similis Ulrich. (D.)
Monotrypa magna Ulrich. (P.)
Monticulipora incompta Ulrich. (D.)
Moorea angularis Ulrich. (D.)
Moorea? perplexa Ulrich. (D.)
Moorea punctata Ulrich. (D.)
Murchisonia? varicosa Hall. (L.)
Nanno aulema Clarke. (D.)
Nicholsonella laminata Ulrich. (D.)
Nicholsonella ponderosa Ulrich. (P.)
Nileus vigilans (Meek and Worthen). (P., D.)
Omospira alexandra (Billings). (Le.)
Omospira laticincta Ulrich. (L.)
Onchometopus simplex Raymond. (P.)
Oncoceras abruptum Hall. (P.)
Oncoceras alceus Hall. (P.)
Oncoceras brevicurvatum Whitfield. (P.)
Oncoceras carveri Clarke. (P.)
Oncoceras huronense (Billings).
Oncoceras lycus (Hall). (P.)
Oncoceras pandion Hall. (P.)
Oncoceras plebeium Hall. (P.)
Ophiletina angularis Ulrich and Scofield. (D.)
Ophiletina sublaxa Ulrich and Scofield. (P.)
Orbignyella wetherbyi (Ulrich). (L., P.)
Orthis tricenaria Conrad. (P., D., L., A.)
Orthoceras amplicameratum Hall. (P.)
Orthoceras decrescens Billings. (Le.)
Orthoceras drummondi Billings.
Orthoceras fusiforme Hall.
Orthoceras junceum Hall. (D., P.)
Orthoceras menelaus Billings.
Orthoceras multicameratum Emmons. (D.)
Orthoceras ottawaense Billings. (Le.)
Orthoceras perparvum Billings.
Orthoceras pertinax Billings. (Le.)
Orthoceras recticameratum Hall. (L.)
Orthoceras tenerum Billings. (Le.)
Orthoceras tenuistriatum (Hall). (P.)
Orthoceras tyronense Foerste. (L.)
Orthodesma antiquum Whiteaves. (L.)
Orthodesma minnesotense Ulrich. (D.)
Oxydiscus argo (Billings). (Le.)
Oxydiscus disculus Billings.
Pachydictya everetti Ulrich. (P.)
Pachydictya fimbriata Ulrich. (D.)
Pachydictya foliata Ulrich. (D.)
Pachydictya occidentalis Ulrich. (D.)
Palæacmæa humilis Ulrich and Scofield. (D., P.)
Parallelodus obliquus Branson. (A.)
Petrocrania ulrichi (Hall and Clarke). (D.)
Phragmolites fimbriatus (Ulrich and Scofield). (P.) D., A.)
Phragmolites obliquus (Ulrich and Scofield). (D.)
Phragmolites similis (Ulrich). (L., Le.)
Phragmolites triangularis (Ulrich and Scofield). (P.)
Phyllodictya frondosa Ulrich. (L.)
Phyllodictya varia Ulrich. (D.)
Phytopsis tubulosa (Hall). (L.)
Pianodema subæquata (Conrad). (L., D., P., A.)
Pianodema subæquata circularis (N. H. Winchell). (D.)
Pianodema subæquata conradi (N. H. Winchell). (P.)
Pianodema subæquata gibbosa (Billings). (D.)
Pianodema subæquata perveta (Conrad). (P., D.)
Platyceras depressum Ulrich and Scofield. (D.)
Platyceras(?) wisconsinensis Ulrich and Scofield. (P.)
Plectambonites sericeus? Sowerby.
Plectoceras halli (Foord).
Plectoceras? undatum (Conrad). (W.)
Plectoceras undatum occidentale (Hall). (P.)
Plethocardia? cordiformis (Billings).
Plethocardia umbonata Ulrich. (D., L., Le.)
Pleurotomaria mohawkensis Miller. (L.)
Pleurotomaria? nucleolata Hall. (L.)
Pleurotomaria? obsoleta Hall. (L.)
Pleurotomaria quadricarinata Hall. (L.)
Podolithus dendrocrinus Sardeson. (D.)
Podolithus eucheirocrinus Sardeson. (D.)
Podolithus schizocrinus Sardeson. (D.)
Porocrinus pentagonius Meek and Worthen. (P.)
Prasopora conoidea Ulrich. (D.)
Prasopora contigua Ulrich. (D.)
Prasopora grandis (Ulrich). (D.)
Prasopora lenticularis Ulrich. (D.)
Prasopora simulatrix Ulrich. (D.)
Primitia celata Ulrich. (D.)
Primitia duplicata Ulrich. (D.)
Primitia mammata Ulrich. (D.)
Primitia minutissima Ulrich. (D.)
Primitia sanctipauli Ulrich. (D.)
Primitiella constricta Ulrich. (L., P.)
Primitiella fillmorensis Ulrich. (D.)
Primitiella limbata Ulrich. (D.)
Primitiella simulans Ulrich. (D.)
Priscochiton canadensis (Billings). (Le.)
Proboscina tumulosa Ulrich. (D.)
Promopalæaster? wilsoni (Raymond). (L.)
Pterotheca attenuata (Hall). (L., P., D.)
Pterotheca expansa (Emmons). (L., P., A.)
Pterygometopus callicephalus Hall. (P., D.)
Pterygometopus intermedius (Walcott). (P., D., A.)
Pterygometopus lincolnensis Branson. (A.)
Pterygometopus schmidti Clarke. (P.)
Rafinesquina alternata? Conrad.

Rafinesquina minnesotensis (N. H. Winchell). (P.)
Rafinesquina minnesotensis inquassa (Sardeson). (D.)
Raphistoma apertum Salter. (Le.)
Raphistoma peracutum Ulrich and Scofield. (D.)
Raphistomina lapicida (Salter). (Le.)
Rauffella filosa Ulrich. (D.)
Rauffella palmipes Ulrich. (D.)
Receptaculites occidentalis Salter. (Le.)
Receptaculites oweni Hall.
Rhinidictya exigua Ulrich. (D.)
Rhinidictya fidelis (Ulrich). (D.)
Rhinidictya grandis Ulrich. (P.)
Rhindictya mutabilis (Ulrich). (D.)
Rhinidictya mutabilis major (Ulrich). (D.)
Rhinidictya mutabilis senilis Ulrich. (D.)
Rhinidictya nicholsoni Ulrich. (L.)
Rhinidictya paupera Ulrich. (D.)
Rhinidictya pediculata Ulrich. (P.)
Rhinidictya trentonensis (Ulrich). (P., D.)
Rhynchotrema ainsliei N. H. Winchell. (D.)
Rhynchotrema minnesotense (Sardeson). (D., P .)
Rhynchotrema ottawaense (Billings). (Le.)
Romingeria trentonensis Weller (New Jersey).
Sabellarites trentonensis Dawson.
Salpingostoma buelli (Whitfield). (P.)
Scenella affinis Ulrich and Scofield. (D.)
Scenella beloitensis Ulrich and Scofield. (P.)
Scenella compressa Ulrich and Scofield. (P.)
Scenella magnifica Ulrich and Scofield. (P.)
Scenella obtusa (Sardeson). (D.)
Scenella superba (Billings). (Le., P.)
Scenidium anthonense Sardeson. (P., D.)
Schizocrania filosa Hall. (D.)
Schmidtella brevis Ulrich. (D.)
Schmidtella crassimarginata Ulrich. (P.)
Schmidtella incompta Ulrich. (D.)
Schmidtella subrotunda Ulrich. (D.)
Schmidtella umbonata Ulrich. (D.)
Scofieldia bilateralis (Ulrich). (D.)
Serpulites dissolutus Billings. (P.)
Sinuites cancellatus Hall. (D., P., L.)
Sinuites pervolutus (Ulrich and Scofield). (D.)
Sinuites rectangularis (Ulrich and Scofield). (P.)
Siphonotreta(?) minnesotensis Hall and Clarke. (P.)
Solenopora compacta Billings. (L., D.)
Sowteria canadensis (Raymond). (L.)
Spatiopora labeculosa Ulrich. (D.)
Sphenolium parallelum Ulrich. (P.)
Spyroceras anellus (Conrad). (D.)
Spyroceras bilineatum (Hall). (L., P., D., A.)
Stellipora antheloidea Hall. (D.)
Stenotheca exserta (Sardeson). (P.)
Stictopora? labyrinthica Hall. (L.)
Stictopora? ramosa Hall. (L.)
Stictoporella angularis Ulrich. (D.)
Stictiporella angularis intermedia Ulrich. (D.)
Stictiporella cribrosa Ulrich. (D.)
Stictoporella dumosa Ulrich. (D.)
Stictoporella frondifera Ulrich. (D.)
Stictoporella rigida Ulrich. (D.)
Stigmatella claviformis (Ulrich). (D.)
Straparollina asperostriata (Billings). (Le.)
Straparollina circe (Billings). (Le.)
Straparollina eurydice (Billings). (Le.)
Streptelasma (Petraia) apertum (Billings). (Le.)
Streptelasma breve Winchell and Schuchert. (P.)
Streptelasma(?) paraaiticum Ulrich. (D., P.)
Streptelasma (Petraia) profundum (Conrad). (L., P., D., Le.)
Streptosolen obconicus Ulrich and Everett. (P.)
Stromatocerium canadense Nicholson and Murie. (L.)
Stromatocerium rugosum Hall.
Stromatotrypa ovata Ulrich. (D.)
Strophomena incurvata (Shepard). (L., P., D., A.)
Strophomena lævis Emmons.
Strophomena septata Winchell and Schuchert. (D.)
Strophomena trentonensis Winchell and Schuchert. (D.)
Strophomena winchelli Hall and Clarke. (P.)
Strophostylus textilis (Ulrich and Scofield). (D., A.)
Strotospongia maculosa Ulrich and Everett. (P.)
Subulites beloitensis Ulrich and Scofield. (P.)
Subulites canadensis Ulrich.
Subulites conradi (Ulrich and Scofield). (P.)
Subulites dixonensis Ulrich and Scofield. (P.)
Subulites nanus Ulrich. (L.)
Subulites parvus Ulrich. (L.)
Subulites regularis Ulrich and Scofield. (L., P.)
Technophorus bellistriatus Branson. (A.)
Technophorus divaricatus Ulrich. (D.)
Technophorus extenuatus Ulrich. (D.)
Technophorus filistriatus Ulrich. (D.)
Technophorus subacutus Ulrich. (P.)
Tetradella quadrilirata (Hall and Whitfield).
Tetradium cellulosum (Hall). (L.)
Tetradium columnare Hall. (L.)
Tetradium halysitoides Raymond. (L.)
Tetranota bidorsata (Hall).
Tetranota bidorsata minor (Ulrich and Scofield) (D., Le.)
Tetranota macra Ulrich and Scofield. (P.)
Tetranota obsoleta Ulrich and Scofield. (D., P.)
Tetranota sexcarinata Ulrich and Scofield. (P.)
Tetranota wisconsinensis (Whitfield). (P.)
Thaleops ovata Conrad. (P.)
Trematis huronensis Billings. (P., D.)
Trematopora primigenia Ulrich. (D.)
Trematopora primigenia ornata Ulrich. (D.)
Trematopora primigenia spinosa Ulrich. (D.)
Trigonodictya conciliatrix (Ulrich). (D.)
Tripteroceras hastatum (Billings). (Le.)
Tripteroceras oweni (Clarke). (P.)
Tripteroceras planoconvexum (Hall). (D., P.)
Tripteroceras planodorsatum (Whitfield). (P.)
Trochonema beachi Whitfield. (P., D.)
Trochonema beloitense Whitfield. (P.)
Trochonema (Eunema) cerithioides (Salter). (Le.)
Trochonema (Eunema) clivosa (Sardeson). (D.)
Trochonema (Eunema) erigone (Billings).
Trochonema niota (Hall). (P., D.)
Trochonema retrorsum (Ulrich and Scofield). (D.)
Trochonema rugosum Ulrich and Scofield. (P.)
Trochonema (Eunema) strigillatum (Salter). (Le.)
Trochonema umbilicatum (Hall). (P.)
Trochonema umbilicatum canadense Ulrich. (Le.)
Trochonema vagrans Ulrich and Scofield. (P.)
Tryblidium erato (Billings). (Le.)
Tryblidium modestum (Ulrich and Scofield). (D.)
Urasterella ulrichi Schuchert. (P.)

Vaginoceras longissimum (Hall). (W.)
Vaginoceras multitubulatum (Hall). (W.)
Vanuxemia crassa Ulrich. (D.)
Vanuxemia decipiens Ulrich. (P.)
Vanuxemia dixonensis Meek and Worthen. (P.)
Vanuxemia dixonensis insueta Ulrich. (P.)
Vanuxemia inconstans Billings. (Le.)
Vanuxemia media Ulrich. (P.)
Vanuxemia niota (Hall). (P., D.)
Vanuxemia obtusifrons (Ulrich). (P.)
Vanuxemia parvula Whiteaves. (L.)
Vanuxemia rectirostris (Hall). (P.)
Vanuxemia rotundata (Hall). (P.)
Vanuxemia sardesoni (Ulrich). (P.)
Vanuxemia suberecta Ulrich. (D.)
Vanuxemia subrotunda Ulrich. (D.)
Vanuxemia terminalis (Ulrich). (P.)
Vanuxemia umbonata Ulrich. (D., Le.)
Vinella repens Ulrich. (D.)
Whiteavesia modioliformis (Meek and Worthen). (P.)
Whiteavesia superba (Hall). (P.)
Whitella compressa Ulrich. (D.)
Whitella concentrica Ulrich. (D.)
Whitella megambona (Whitfield). (P.)
Whitella rugatina Ulrich. (D.)
Whitella scofieldi Ulrich. (D.)
Zittelella inosculata Ulrich and Everett. (P.)
Zittelella lobata (Ulrich and Everett). (P.)
Zittelella trentonensis (Worthen). (P.)
Zittelella typicalis Ulrich and Everett. (P.)
Zittelella typicalis pistilliformis Ulrich and Everett. (P.)
Zittelella typicalis subrotunda Ulrich and Everett. (P.)
Zittelella typicalis turbinata Ulrich and Everett. (P.)
Zitteloceras billingsi (Salter). (Le., P., A.)
Zitteloceras hallianum (D'Orbigny). (D.)
Zygospira nicolleti Winchell and Schuchert. (P., A.)
Zygospira recurvirostris (Hall). (P., L., D., A.)

BLACK RIVER OR RICHMOND (MANITOBA).

(This list includes the species from the Cat Head and associated formations in Manitoba. Although recorded as of Mohawkian age by Whiteaves, it is probable that many of them were derived from Richmond strata.)

Actinoceras (*Paractinoceras*) *canadense* (Whiteaves).
Actinoceras richardsoni Stokes.
Actinoceras richardsoni magnum Parks.
Aparchites granilabiatus (Ulrich).
Aparchites parvulus Jones.
Aparchites whiteavesi Jones.
Ascoceras boreale Parks.
Ascoceras costulatum Whiteaves.
Aulocopella winnipegensis Rauff.
Chaetetes perantiquus Whiteaves.
Chondrites (*Buthotrephis*) *cuneatus* Whiteaves.
Chondrites cupressinus Whiteaves.
Chondrites gracillimus Whiteaves.
Chondrites (*Buthotrephis*) *patulus* Whiteaves.
Clinopistha antiqua Whiteaves.
Corynotrypa canadensis Whiteaves.
Cyrtoceras laticurvatum Whiteaves.
Cyrtoceras manitobense Whiteaves.
Dictyonema canadense (Whiteaves).
Discoceras canadense Whiteaves.
Ectomaria pagoda occidentalis (Whiteaves).
Edmondia? vetusta Whiteaves.
Eurystomites plicatus Whiteaves.
Halysites catenularia (Linnæus).
Halysites catenularia gracilis (Hall).
Hormotoma winnipegensis Whiteaves.
Jovellania semiplanata (Whiteaves).
Loxonema winnipegense Whiteaves.
Maclurina manitobensis Whiteaves.
Maclurina manitobensis acuta Parks.
Maclurites subovatus (Parks).
Mesotrypa selkirkensis Whiteaves.
Modiolopsis angustifrons Whiteaves.
Narthecoceras crassiphonatum (Whiteaves).
Narthecoceras simpsoni (Billings).
Oncoceras magnum Whiteaves.
Oncoceras magnum intermedium Whiteaves.
Oncoceras whiteavesi Miller.
Orthoceras lepidodendroides Parks.
Orthoceras selkirkense Whiteaves.
Orthoceras winnipegense Whiteaves.
Orthodesma affine Whiteaves.
Palæopteria parvula Whiteaves.
Pleurotomaria (?) *margaritoides* Whiteaves.
Pleurotomaria stokesiana Whiteaves.
Poterioceras apertum Whiteaves.
Poterioceras gracile Whiteaves.
Poterioceras nobile Whiteaves.
Poterioceras tyrelli Parks.
Rhinidictya obliqua (Ulrich).
Rhytimya recta Whiteaves.
Serpulites dissolutus (Billings).
Solenopora compacta Billings.
Thamnograptus affinis Whiteaves.
Trichospongia hystrix Whiteaves.
Tripteroceras lambi (Whiteaves).
Trochoceras mccharlesi Whiteaves.
Trochonema eccentricum Ulrich.

POGONIP OF NEVADA.

(Lower = L.; upper = U.)

Acrotreta? cancellata Walcott. (L.)
Acrotreta curvata Walcott. (L.)
Acrotreta idahoensis Walcott. (L.)
Acrotreta idahoensis alta Walcott. (L.)
Agnostus communis (Hall and Whitfield). (L.?)
Agnostus tumidosus (Hall and Whitfield). (L.?)
Apatokephalus finalis (Walcott). (U.)
Archinacella phillipsi (Walcott). (U.)
Arethusina americana Walcott. (L.?)
Asaphus? cariboucnsis Walcott. (U.)
Asaphus? curiosus Billings. (U.)
Bathyurus pogonipensis Hall and Whitfield. (L.)
Bathyurus(?) *simillimus* Walcott. (U.)
Calvinella tenuisculpta Walcott. (L.)
Coleoprion minuta Walcott. (U.)
Conokephalina inexpectans (Walcott). (L.)
Ctenodonta contracta Salter. (U.)
Ctenodonta hamburgensis (Walcott). (U.)
Cyrtolites sinuatus Hall and Whitfield. (U.)
Dalmanella hamburgensis (Walcott). (U.)
Dalmanella melita (Hall and Whitfield). (L.)
Dolichometopus? mccoyi (Walcott). (U.)
Elkania ambigua (Walcott). (L.)

Eotomaria supracingulata (Billings). (U.)
Fusispira compacta Hall and Whitfield. (U.)
Haploconus brevimarginatus (Walcott). (U.)
Hebertella lonensis (Walcott). (U.)
Holasaphus congeneris (Walcott). (U.)
Hyolithes vanuxemi Walcott. (L.)
Hystricurus tuberculatus (Walcott). (U.)
Leperditia bivia White. (U.)
Lingulella manticula (White). (L.)
Lingulella pogonipensis Walcott. (L.)
Linnarssonella minuta Hall and Whitfield. (L.)
Lophospira bicincta (Hall). (U.)
Maclurites annulatus (Walcott). (U.)
Maclurites carinatus (Walcott). (U.)
Maclurites minimus (Hall and Whitfield).
Maclurites subannulatus (Walcott). (U.)
Megalaspis belemnurus White. (U.)
Modiolopsis occidens Walcott. (U.)
Modiolopsis pogonipensis Walcott. (U.)
Obolus anceps Walcott. (L.)
Obolus discoideus (Hall and Whitfield). (L.)
Obolus (*Westonia*) *iphis* Walcott. (L.)
Obolus maera (Hall and Whitfield). (L.)
Orthis tricenaria Conrad. (U.)
Parastrophia(?) *obscura* (Hall and Whitfield).
Pianodema pogonipensis (Hall and Whitfield). (U.)
Pianodema subequata perveta (Conrad). (U.)
Pleurotomaria lonensis Walcott. (U.)
Pliomerops nevadensis (Walcott). (U.)
Ptychoparia affinis Walcott. (L.?)
Ptychoparia? annectans Walcott. (L.)
Ptychoparia granulosus (Hall and Whitfield). (L.?)
Ptychoparia haguei (Hall and Whitfield). (L.?)
Ptychoparia maculosa (Hall and Whitfield). (L.?)
Ptychoparia oweni (Hall and Whitfield). (L.?)
Raphistoma acutum Hall and Whitfield.
Receptaculites ellipticus Walcott. (U.)
Receptaculites elongatus Walcott. (U.)
Receptaculites mammillaris Walcott. (U.)
Scenella analoga (Walcott). (U.)
Schizambon typicalis Walcott. (L.)
Strophomena(?) *minor* (Walcott). (U.)
Symphysurus eurekensis (Walcott). (L.)
Symphysurus(?) *goldfussi* Walcott. (U.)
Syntrophia nundina Walcott. (L.)
Tetranota bidorsata (Hall). (U.)

TRENTON OF CANADA, NEW YORK, ETC., AND OHIO VALLEY.

(Either the formation or locality is denoted in parentheses after each species.)

Actinoceras(?) *cuvieri* (Troost) (Bigby.)
Actinoceras distans (Hall). (N. Y.)
Actinoceras (*Deiroceras*) *python* (Billings). (Canada.)
Agelacrinites vetustus (Foerste). (Cynthiana.)
Allodesma subellipitum (Ulrich). (Canajoharie.)
Allonychia flanaganensis Foerste. (Cynthiana.)
Ambonychia amygdalina Hall. (N. Y.)
Ambonychia bellistriata Hall. (N. Y.)
Ambonychia orbicularis (Emmons). (N. Y.)
Amphilichas trentonensis (Conrad). (Pa., N. Y., etc.)
Amplexopora cylindracea Ulrich and Bassler. (Catheys.)
Aparchites minutissimus trentonensis Ulrich. (Ky., Tenn., etc.)
Aparchites mundulus Jones. (Quebec.)
Archinacella simulatrix Ulrich and Scofield. (Hermitage.)
Archinacella trentonensis (Billings). (Canada.)
Aristozoe canadensis Whitfield. (Ontario.)
Arthostylus tenuis (James). (Upper Trenton-Ky.)
Arthroclema billingsi Ulrich. (Ontario.)
Arthroclema pulchellum Billings. (Ontario.)
Arthropora bifurcata Ulrich. (Ky., Tenn., etc.)
Arthropora kentuckiensis (James). (Upper Trenton-Ky.)
Asaphus micropleurus Green. (N. Y.)
Aspidopora calycula (James). (Upper Trenton-Ky.)
Astylospongia parvula Billings. (Ontario.)
Batostoma superbum (Foord). (Quebec.)
Bellerophon bilineatus Ulrich. (Flanagan.)
Bellephoron clausus Ulrich. (Catheys and Perryville.)
Bellerophon declivis Conrad. (Pa.)
Bellerophon platystoma (Meek and Worthen). (Galena.)
Bellerophon profundus Emmons. (N. Y.)
Bellerophon rogersensis Foerste. (Upper Trenton-Ky.)
Bellerophon troosti D'Orbigny. (Catheys, Flanagan, Perryville.)
Bellerophon troosti burginensis Ulrich. (Flanagan.)
Beyrichia bella Walcott. (N. Y.)
Brachiospongia digitata (Owen). (Bigby.)
Bucania frankfortensis Ulrich. (Cynthiana.)
Bucania intexta Hall. (N. Y.)
Bucania lindsleyi (Safford). (Catheys.)
Bucania micronema Ulrich. (Flanagan.)
Bucania nana Ulrich. (Flanagan.)
Bucania nashvillensis Ulrich. (Catheys.)
Bucania peracuta Ulrich. (Catheys.)
Bucania punctifrons (Emmons). (N. Y., Canada, Tenn., etc.)
Bucania rugatina Ulrich. (Flanagan.)
Bucania singularis Ulrich. (Catheys.)
Bucania subangulata Ulrich. (Flanagan.)
Bucania sublata Ulrich and Scofield. (Flanagan.)
Bucanopsis carinifera Ulrich. (Flanagan.)
Bumastus billingsi Raymond and Narraway (Quebec.)
Bumastus elongatus Weller. (N. J.)
Bumastus transversalis Weller. (N. J.)
Buthotrephis cæspitosa Hall. (N. Y.)
Buthotrephis gracilis Hall. (N. Y.)
Buthotrephis succulens Hall. (N. Y.)
Buthotrephis tenuis (Hall). (N. Y.)
Byssonychia(?) *byrnesi* Ulrich. (Upper Trenton-Ky.)
Byssonychia vera Ulrich. (Upper Trenton-Ky.)
Bythocypris cyclindrica (Hall). (Ky., Tenn., etc.)
Calymene abbreviata Foerste. (Cynthiana.)
Calymene platycephala Foerste. (Hermitage.)
Camarella ambigua (Hall). (N. Y.)
Cameroceras approximatus (Hall). (N. Y.)
Cameroceras duplicatum (Hall). (N. Y.)
Cameroceras lativentrum (Hall). (N. Y.)
Cameroceras trentonensis Conrad. (N. Y.)
Carinaropsis carinata Hall. (N. Y.)

Carinaropsis cunulae (Hall). (Flanagan, Catheys.)
Carinaropsis cymbula (Hall). (Catheys.)
Carinaropsis explanata Ulrich. (Upper Trenton-Ky.)
Ceratocephala horani (Billings). (Canada.)
Ceratopsis chambersi (Miller). (Minn., etc.)
Ceratopsis intermedia Ulrich. (Ky.)
Ceratopsis? quadrifida (Jones). (Quebec.)
Ceraurinus confluens Barton. (Picton.)
Ceraurus dentatus Raymond and Barton. (N. Y., Ontario.)
Ceraurus pleurexanthemus Green. (N. Y., etc.)
Chætetes?? rugosus Hall (N. Y.)
Chasmatopora dawsoni (Ulrich). (Canada, Vt.)
Chasmatopora fenestrata (Hall). (N. Y., N. J., Canada.)
Chasmatopora reticulata (Hall). (N. Y.)
Chaunograptus gemmatus Ruedemann. (Canajoharie.)
Cheirocrinus anatiformis (Hall). (N. Y.)
Cheirocrinus walcotti (Jaekel). (N. Y.)
Clathrospira conica Ulrich and Scofield. (Ky., etc.)
Cleiocrinus grandis Billings. (Ontario.)
Cleiocrinus magnificus Billings. (Ontario.)
Clidophorus neglectus Hall. (N. J., Mo.)
Climacograptus caudatus Lapworth. (Magog.)
Climacograptus caudatus laticaulis Gurley.(Magog.)
Climacograptus kampiotheca Gurley. (Magog.)
Climacograptus oligotheca Gurley. (Magog.)
Climacograptus putillus (Hall). (Canada, N. Y., etc.)
Climacograptus spiniferus (Ruedemann). (Canajoharie.)
Climacograptus typicalis Hall. (N. Y., Canada, Ohio, Minn.)
Clionychia subundata (Ulrich). (Upper Trenton-Ky.)
Clionychia undata (Emmons). (N. Y.)
Clitambonites multistriata Foerste. (Perryville.)
Clitambonites rogersensis (Foerste). (Upper Trenton-Ky.)
Colpomya constricta Ulrich. (Perryville.)
Colpomya faba Emmons. (N. J., N. Y.)
Columnaria alveolata Goldfuss. (N. Y., Ky., etc.)
Columnaria alveolata interventa Foerste. (Cynthiana.)
Columnaria alveolata minima Foerste. (Cynthiana.)
Columnaria halli Nicholson. (Canada, N. Y., Ky., etc.)
Conchopeltis alternata Walcott. (N. Y.)
Conolichas cornutus (Clarke). (N. Y., Canada.)
Conotreta rusti Walcott. (N. Y., Ky.)
Constellaria emaciata (Ulrich and Bassler). (Cynthiana, Bigby, Perryville.)
Constellaria fischeri Ulrich. (Cynthiana, Catheys.)
Constellaria teres Ulrich and Bassler. (Catheys, Cynthiana, Bigby.)
Conularia gattingeri Safford. (Tenn.)
Conularia gracilis Hall. (N. Y.)
Conularia granulata Hall. (N. Y.)
Conularia indentata Conrad. (Ill.)
Conularia papillata Hall. (N. Y.)
Conularia quadrata Walcott. (N. Y.)
Conularia trentonensis Hall. (N. Y., Canada, etc.)
Conularia trentonensis rogersensis Foerste. (Upper Trenton-Ky.)
Cornulites flexuosus (Hall). (N. Y.)
Coryphocephalus tuberculatus (Weller). (N. J.)
Corynotrypa delicatula (James). (N. Y., Ky., etc.)
Corynotrypa inflata (Hall). (N. Y., Ky., etc.)
Cremacrinus barrandei (Walcott). (N. Y.)
Cremacrinus billingsianus (Ringueberg). (Ontario, ?Curdsville.)
Cremacrinus furcillatus (Billings). (Ontario, ?Curdsville.)
Crepipora spatiosa Ulrich. (Cynthiana.)
Crepipora venusta (Ulrich). (Upper Trenton-Ky.)
Cryptolithus tessellatus (Greene). (N. Y., Canada, etc.)
Cryptozoon boreale Dawson. (Quebec.)
Ctenodonta alta (Hall). (Galena.)
Ctenodonta donaciformis (Hall). (N. Y.)
Ctenodonta dubia (Hall). (N. Y.)
Ctenodonta gibbosa (Hall). (N. Y.)
Ctenodonta hartsvillensis Safford. (Flanagan, Catheys.)
Ctenodonta levata (Hall). (N. Y., N. J., Pa., Ky.)
Ctenodonta nasuta (Hall). (N. Y.)
Ctenodonta obliqua (Hall). (Ky., Tenn., etc.)
Ctenodonta pulchella (Hall). (N. Y.)
Ctenodonta retrorsa Ulrich. (Hermitage.)
Ctenodonta sanguinolaroidea (Hall). (N. Y.)
Ctenodonta socialis Ulrich. (Hermitage.)
Cuneamya acutifrons Ulrich. (Upper Trenton-Ky.)
Cuneamya oblonga Ulrich. (Galena.)
Cuneamya vetusta (Hall). (N. Y.)
Cupulocrinus heterocostalis (Hall). (N. Y.)
Cyathophycus? tubulare (Ruedemann). (Canajoharie.)
Cycloceras olorus (Hall). (N. Y.)
Cycloceras tereliforme (Hall). (N. Y.)
Cycloconcha oblonga Foerste. (Upper Trenton-Ky.)
Cyclocystoides salteri Hall. (N. Y.)
Cyclonema hageri Billings. (Quebec.)
Cyclonema montrealense Billings. (Canada.)
Cyclonema varicosum Hall. (Catheys.)
Cyclora hoffmani Miller. (Ky., Tenn., etc.)
Cyclora minuta Hall. (Ky., Tenn , etc.)
Cyclora parvula Hall. (Ky., Tenn., etc.)
Cyclospira bisulcata (Emmons). (N. Y., etc.)
Cylindrocœlia minor Ulrich. (Ky.)
Cyphaspis trentonensis Weller. (N. J.)
Cyphotrypa acervulosa (Ulrich). (Ky., etc.)
Cyphotrypa frankfortensis Ulrich and Bassler. (Cynthiana.)
Cypridina antiqua Jones. (Ontario.)
Cyrtoceras camurum Hall. (N. Y.)
Cyrtoceras carrollense Worthen. (Galena.)
Cyrtoceras constrictostriatum Hall. (N. Y.)
Cyrtoceras filosum (Conrad). (N. Y.)
Cyrtoceras juvenale Billings. (Quebec.)
Cyrtoceras massiense Safford. (Tenn.)
Cyrtoceras multicameratum Hall. (N. Y.)
Cyrtoceras saffordi Miller. (Catheys.)
Cyrtoceras subarcuatum D'Orbigny. (N. Y.)
Cyrtoceras trentonense (Emmons). (N. Y.)
Cyrtodonta grandis intermedia Ulrich. (Catheys.)
Cyrtodonta obliqua (Meek and Worthen). (Galena.)
Cyrtodonta obtusa (Hall). (N. Y., Canada.)
Cyrtodonta saffordi (Hall). (Catheys.)
Cyrtodonta subangulata (Hall). (N. Y.)
Cyrtolites ornatus minor Ulrich and Scofield. (N. J.)
Cyrtolites parvus Ulrich. (Upper Trenton-Ky.)
Cyrtolites retrorsus Ulrich and Scofield. (Ky., Tenn.)

Cyrtolites subplanus Ulrich. (Catheys.)
Cyrtolitina nitidula Ulrich. (Upper Trenton-Ky.)
Cyrtospira abbreviata (Hall). (N. Y.)
Cytheropsis crenulata (Emmons). (N. Y.)
Cytheropsis emmonsi (Vogdes). (N. Y.)
Cytheropsis subelliptica Emmons. (N. Y.)
Dalmanella bassleri Foerste. (Upper Trenton-Ky.)
Dalmanella fertilis Bassler. (Hermitage.)
Dalmanites bebryx Billings. (Ontario.)
Dekayella foliacea Ulrich and Bassler. (Cynthiana.)
Dekayella trentonensis (Ulrich). (Wilmore.)
Dendrocrinus alternatus (Hall). (N. Y.)
Dendrocrinus dyeri (Meek). (Upper Trenton-Ky.)
Dendrocrinus gracilis (Hall). (N. Y.)
Dendrocrinus gregarius Billings. (Ontario.)
Dendrocrinus retractilis Walcott. (N. Y.)
Dendrocrinus rusticus Billings. (Ontario.)
Dendrocrinus similis Billings. (Ontario.)
Dendrocystites? paradoxica (Billings). (Canada.)
Dendrograptus unilateralis Gurley. (Magog.)
Dermatostoma cavernosum Parks. (Catheys.)
Dicranograptus nicholsoni Hopkinson. (N. Y.)
Dicranograptus nicholsoni parvulus Ruedemann. (Canajoharie.)
Dinorthis (*Plæsiomys*) *iphigenia* (Billings). (Ontario.)
Dinorthis pectinella (Emmons). (Hermitage.)
Dinorthis (*Plæsiomys*) *ulrichi* Foerste. (Flanagan.)
Diploclema trentonense Ulrich. (N. Y.)
Diplograptus (*Glyptograptus*) *amplexicaulis* (Hall).
Diplograptus euglyphus pygmæus Ruedemann. (Canajoharie.)
Diplograptus (*Amplexograptus*) *macer* Ruedemann. (Canajoharie.)
Diplograptus (*Mesograptus*) *mohawkensis* Ruedemann. (Canajoharie.)
Diplograptus vespertinus (Ruedemann). (Canajoharie.)
Eccyliomphalus (*Orthostoma*) *communis* (Conrad). (N. Y.)
Eccyliomphalus contiguus Ulrich. (N. J.)
Eccyliomphalus trentonensis (Conrad). (N. J.; Pa., N. Y.)
Eccyliopterus ottowaensis (Billings). (Ontario.)
Eccyliopterus owenanus (Meek and Worthen). (Galena.)
Ectenocrinus canadensis (Billings). (Canada, Ky.)
Ectenocrinus grandis (Meek). (Upper Trenton-Ky.)
Encrinurus trentonensis Walcott (N. J.)
Encrinurus tuberculosus Collie. (Pa.)
Encrinurus vigilans (Hall.) (N. Y.)
Endoceras angusticameratum Hall. (N. Y.)
Endoceras annulatum Hall. (N. Y., Canada.)
Endoceras arctiventrum Hall. (N. Y.)
Endoceras magniventrum Hall. (N. Y.)
Endoceras proteiforme Hall. (N. Y., etc.)
Endoceras proteiforme elongatum Hall. (N. Y.)
Endoceras proteiforme strangulatum Hall. (N. Y.)
Endoceras vanuxemi (Conrad). (N. Y.)
Endodesma gesneri (Billings). (Ontario.)
Endodesma postlatum Ulrich. (Galena.)
Endodesma trentonense Hall. (N. Y.)
Eoharpes escanabiæ (Hall). (Mich.)
Eoharpes ottowaensis (Billings). (Canada, N. Y., N. J.)
Eotomaris elevata Ulrich. (Catheys.)
Eridotrypa ædilis (Eichwald). (Ky., Tenn., etc.)
Eridotrypa briareus (Nicholson). (Catheys.)
Eridotrypa trentonensis (Nicholson). (Canada, etc.)
Escharopora ponderosa (Ulrich). (Upper Trenton-Ky.)
Escharopora recta Hall. (N. Y., Canada.)
Escharopora recta nodosa Hall. (N. Y.)
Eurychilina jerseyensis Weller. (N. J.)
Eurychilina oculifera Weller. (N. J.)
Eurychilina subradiata Ulrich. (Canajoharie.)
Eurydictya multipora (Hall). (Wilmore.)
Eurymya subplana Ulrich. (Hermitage.)
Eurypterus megalops Clarke and Ruedemann. (N. Y.)
Euspirocrinus obconicus W. R. Billings. (Quebec.)
Favositella laxata (Ulrich). (Canada, etc.)
Fusispira inflata (Meek and Worthen.) (Galena.)
Fusispira subfusiformis (Hall). (Wilmore, etc.)
Fusispira sulcata Ulrich. (Upper Trenton-Ky.)
Gerasaphes ulrichana Clarke. (Upper Trenton-Ky.)
Glassia romingeri Hall and Clarke. (Mich.)
Glossograptus arthracanthus Gurley. (Va.)
Glossograptus quadrimucronatus Hall (Collingwood.)
Glossograptus (*Orthograptus*) *quadrimucronatus approximatus* Ruedemann. (Canajoharie.)
Glossograptus (*Orthograptus*) *quadrimucronatus cornutus* Ruedemann. (Canajoharie.)
Glossograptus (*Orthograptus*) *quadrimucronatus postremus* Ruedemann. (Canajoharie.)
Glyptocrinus plumosus (Hall). (N. Y.)
Goldius lunatus (Billings). (Canada, etc.)
Goniophora carinata (Hall). (N. Y., N. J.)
Gyronema percarinata (Hall). (N. Y.)
Halliella sculptilis (Ulrich). (Perryville.)
Hallopora multitabulata (Ulrich). (Lower Wilmore.)
Haploconus smithi (Billings). (Ontario.)
Hebertella frankfortensis Foerste. (Bigby, Wilmore.)
Hebertella latisulcata Foerste. (Upper Trenton-Ky.)
Hebertella maria parkensis Foerste. (Cynthiana, Perryville.)
Hebertella (*Eridorthis*) *nicklesi* Foerste. (Upper Trenton-Ky.)
Hebertella (*Eridorthis*) *rogersensis* (Foerste). (Upper Trenton-Ky.)
Hebertella subjugata (Hall).
Hemicystites billingsi (Chapman). (Ontario.)
Hemicystites carnensis Foerste. (Upper Trenton-Ky.)
Heterorthis clytie Hall. (Hermitage.)
Heterotrypa foerstei Nickles. (Upper Trenton-Ky.)
Heterotrypa parvulipora Ulrich and Bassler. (Catheys.)
Holopea incerta Foerste. (Upper Trenton-Ky.)
Holopea lavinia Billings. (Canada.)
Holopea nashvillensis Ulrich. (Catheys.)
Holopea obliqua Hall. (N. Y.)
Holopea parvula Ulrich. (Flanagan.)
Holopea symmetrica Hall. (N. Y., N. J.)
Holopea ventricosa Hall. (N. Y.)
Homalonotus trentonensis Simpson. (Pa.)
Homotrypa callosa Ulrich. (Wilmore.)
Homotrypa similis Foord. (Canada.)
Homotrypella granulifera (Ulrich). (Wilmore.)

Homotrypella norwoodi Nickles. (Cynthiana?)

Hormotoma bellicincta (Hall). (N. Y.)

Hormotoma gracilis (Hall). (N. Y., Ky., etc.)

Hormotoma salteri Ulrich. (Flanagan.)

Hormotoma salteri nitida Ulrich. (Flanagan.)

Hormotoma terebriformis Foerste. (Upper Trenton-Ky.)

Hudsonaster matutinus (Hall). (N. Y., Canada.)

Hudsonaster milleri Schuchert. (Wilmore.)

Hyolithes pinniformis Ruedemann. (Canajoharie.)

Illænus americanus (Billings). (Canada.)

Illænus latidorsatus Hall. (N. Y.)

Iocrinus subcrassus (Meek and Worthen). (Ky., etc.)

Iocrinus trentonensis Walcott. (N. Y.)

Isochilina amii Jones. (Quebec.)

Isochilina ampla Ulrich. (Catheys.)

Isochilina gracilis (Jones). (Canada.)

Isochilina gregaria ulrichiana Jones. (Ontario.)

Isochilina jonesi Wetherby. (Perryville.)

Isochilina saffordi Ulrich. (Catheys.)

Isochilina? subnodosa Ulrich. (Perryville.)

Isochilina whiteavesi Jones. (Quebec.)

Isoteloides homalonotoides (Walcott). (N. Y.)

Isotelus benjamini Ulrich. (Upper Trenton-Ky.)

Isotelus covintonensis Ulrich. (Upper Trenton-Ky.)

Isotelus gigas? Dekay. (Ky., Tenn., etc.)

Isotelus jacobus Clarke. (N. Y.)

Isotelus maximus? Locke. (Ky., Tenn., etc.)

Isotelus megalops Green. (N. Y.)

Klœdenia prænuntia Ulrich and Bassler. (Hermitage.)

Labechia macrostyla Parks. (Mich.)

Lasiograptus (*Thysanograptus*) *eucharis* (Hall). (Collingwood.)

Leperditella? obscura (Jones). (Quebec.)

Leperditia appressa Ulrich. (Perryville.)

Leperditia cæcigena frankfortensis Ulrich. (Perryville.)

Leperditia canadensis louckiana Jones (Canada.)

Leperditia linneyi Ulrich. (Perryville.)

Leperditia ovata Jones. (Pa.)

Leperditia tumidula Ulrich. (Perryville.)

Lepidocoleus jamesi (Hall and Whitfield). (Ky., Tenn., etc.)

Leptæna tenuistriata Sowerby. (Hermitage.)

Leptobolus lepis Hall. (Upper Trenton-Ky.)

Leptobolus lepis cliftonensis Foerste. (Hermitage.)

Leptograptus flaccidus Hall. (Collingwood.)

Lichenocrinus pattersoni Miller. (Upper Trenton-Ky.)

Lichenocrinus subæqualis Foerste. (Upper Trenton-Ky.)

Licrophycus minor Billings. (Canada.)

Licrophycus ottowaense Billings. (Canada.)

Lingula æqualis Hall. (N. Y.)

Lingula briseis Billings. (Canada.)

Lingula cincinnatiensis Hall and Whitfield. (Upper Trenton-Ky.)

Lingula cobourgensis Billings. (Canada.)

Lingula covingtonensis Hall and Whitfield. (Upper Trenton-Ky.)

Lingula (*Palæoglossa*) *crassa* (Hall). (N. Y.)

Lingula curta Conrad. (N. Y., Pa.)

Lingula elliptica Emmons. (Va.)

Lingula elongata Hall. (N. Y., Ontario.)

Lingula modesta Ulrich. (Upper Trenton and Hermitage.)

Lingula obtusa Hall. (N. Y., Canada.)

Lingula papillosa Emmons. (N. Y.)

Lingula philomela Billings. (Canada, N. J.)

Lingula procteri Ulrich. (Upper Trenton-Ky.)

Lingula procteri versaillesensis Foerste. (Flanagan.)

Lingula progne Billings. (Collingwood.)

Lingula riciniformis Hall. (N. Y., etc.)

Lingula striata Emmons. (Va.)

Lingula (*Palæoglossa*) *trentonensis* (Conrad). (N. Y., etc.)

Lingula waynesboroensis Foerste. (Hermitage.)

Lingula whitfieldi Ulrich. (Upper Trenton-Ky., N. J.)

Lingulops norwoodi (James). (Upper Trenton-Ky., N. J.)

Liospira americana Billings. (Canada, N. Y., etc.)

Liospira micula (Hall). (Ky., Tenn., etc.)

Liospira(?) mundula Ulrich. (Ky.)

Liospira persimilis Ulrich. (Catheys.)

Liospira progne Billings. (Canada.)

Liospira subtilistriata (Hall). (N. Y.)

Liospira vitruvia Billings. (Canada, N. Y., etc.)

Lockeia siliquaria James. (Upper Trenton-Ky.)

Lophospira abnormis Ulrich. (Upper Trenton-Ky.)

Lophospira bicincta (Hall). (N. Y., etc.)

Lophospira bowdeni (Safford). (Tenn., Ky., etc.)

Lophospira conoidea Ulrich. (Catheys.)

Lophospira decursa Ulrich. (Wilmore?)

Lophospira elevata Ulrich and Scofield. (Flanagan.)

Lophospira humilis Ulrich. (Catheys and Flanagan.)

Lophospira medialis Ulrich and Scofield. (Flanagan and Perryville.)

Lophospira medialis burginensis Ulrich. (Flanagan.)

Lophospira producta Ulrich. (Catheys.)

Lophospira pulchella Ulrich and Scofield. (Flanagan.)

Lophospira saffordi Ulrich. (Catheys.)

Lophospira sumnerensis (Safford). (Catheys, Flanagan.)

Lophospira uniangulata (Hall). (N. Y.)

Loxoceras milleri (Foerste). (Perryville.)

Lyrodesma acuminatum intermedium Ulrich. (Ky.)

Lyrodesma subplanum Ulrich. (Upper Trenton-Ky.)

Maclurina cuneata (Whitfield). (Galena.)

Mastigograptus arundinaceus (Hall). Canajoharie.)

Matheria brevis Whiteaves. (Ontario.)

Matheria tenera Billings. (Canada.)

Merocrinus corroboratus Walcott. (N. Y.)

Merocrinus typus Walcott. (N. Y., Ky.)

Mesopalæaster antiquus (Troost). (Catheys.)

Mesopalæaster dubius (Miller and Dyer). Upper Trenton-Ky.)

Mesotrypa angularis Ulrich and Bassler. (Hermitage.)

Mesotrypa echinata Ulrich and Bassler. (Hermitage.)

Mesotrypa quebecensis (Ami). (Hermitage.)

Mesotrypa regularis (Foord). (Ontario.)

Mesotrypa whiteavesi (Nicholson). (Ontario.)
Modiolon ganti (Safford). (Hermitage.)
Modiolon oviformis (Ulrich). (Hermitage.)
Modiolon oviformis amplus Ulrich. (Hermitage.)
Modiolon winchelli (Safford). (Hermitage.)
Modiolopsis arcuata Hall. (N. Y.)
Modiolopsis depressa Weller. (N. J.)
Modiolopsis latus Hall. (N. Y.)
Modiolopsis maia Billings. (Canada.)
Modiolopsis meyeri Billings. (Ontario.)
Modiolopsis rogersensis Foerste. (Upper Trenton-Ky.)
Monotrypa globosa Weller. (N. J.)
Monotrypa undulata (Nicholson). (Ontario.)
Monticulipora arborea Ulrich. (Wilmore.)
Monticulipora westoni Foord. (Ontario.)
Nyctopora billingsi Nicholson. (Ontario, N. J.)
Odontopleura parvula (Walcott). (N. Y.)
Odontopleura trentonensis (Hall). (Ontario.)
Ogygites canadensis (Chapman). (Collingwood.)
Ohiocrinus exilis Foerste. (Upper Trenton-Ky.)
Oncoceras constrictum Hall. (N. Y.)
Orbicula excentrica Emmons. (Va.)
Orbignyella billingsi (Foord). (Ontario.)
Orthoceras æquale (Emmons). (N. Y.)
Orthoceras albersi Miller. (Upper Trenton-Ky.)
Orthoceras amplicameratum Hall. (N. Y.)
Orthoceras arcuolineatum Ruedemanp. (Canajoharie.)
Orthoceras arcuoliratum Hall. (N. Y.)
Orthoceras brongniarti (Troost). Tenn.)
Orthoceras clathratum Hall. (N. Y.)
Orthoceras hudsonicum Ruedemann. (Canajoharie.)
Orthoceras huronense Billings. (Canada.)
Orthoceras junceum Hall. (N. Y.)
Orthoceras latiannulatum Hall. (N. Y.)
Orthoceras lineolatum Hall. (N. Y.)
Orthoceras ludlowense Miller and Faber. (Upper Trenton-Ky.)
Orthoceras multilineatum (Emmons). (N. Y.)
Orthoceras rogersense Foerste. (Upper Trenton, Ky.)
Orthoceras strigatum Hall. (N. Y.)
Orthoceras tenuistriatum (Hall). (N. Y., N. J.)
Orthoceras tenuitextum (Hall). (N. Y., N. J.)
Orthoceras textile Hall. (N. Y.)
Orthoceras undulostriatum Hall. (N. Y.)
Orthoceras vulgatum Billings. (Ontario.)
Orthodesma canaliculatum Ulrich. (N. J.)
Orthodesma nasutum (Conrad). (N. J.)
Orthodesma subnasutum (Meek and Worthen.) (Galena.)
Orthorhynchula linneyi (James). (Perryville-Cynthiana.)
Oxydiscus cristatus (Safford). (Catheys.)
Oxydiscus subacutus Ulrich. (Flanagan.)
Pachydictya acuta (Hall). (N. Y., etc.)
Pachydictya triserialis Ulrich. (Quebec.)
Palæophycus obscurum Billings. (Ont.)
Palæophycus rugosum Hall (N. Y.)
Palæophycus simplex Hall. (N. Y.)
Parastrophia hemiplicata Hall. (N. Y.)
Pasceolus globosus Billings. (Canada, etc.)
Pattersonia aurita (Beecher). (Bigby.)
Peronopora milleri Nickles. (Cynthiana.)
Pholidops trentonensis Hall. (N. Y.)
Phragmolites compressus Conrad. (N. Y.)
Platystrophia colbiensis Foerste. (Cynthiana.)
Platystrophia colbiensis mutata Foerste. (Cynthiana.)
Platystrophia colbiensis precursor Foerste. (Cynthiana.)
Plectambonites curdsvillensis Foerste. (Cynthiana.)
Plectambonites sericeus? Sowerby. (N. Y., Ky., etc.)
Pleurocystites elegans Billings. (Ontario.)
Pleurocystites exornatus Billings. (Quebec.)
Pleurotomaria agave Billings. (Canada.)
Pleurotomaria (*Trochonema?*) *ambigua* (Hall) (N. Y.)
Pleurotomaria indenta Hall. (N. Y.)
Porocrinus smithi Grant. (Ontario.)
Prasopora falesi (James). (Hermitage.)
Prasopora nodosa Ulrich. (Catheys.)
Prasopora oculata Foord. (Canada.)
Prasopora patera Ulrich. (Hermitage.)
Prasopora selwyni (Nicholson). (Canada, etc.)
Prasopora simulatrix Ulrich. (Wilmore.)
Prasopora simulatrix orientalis Ulrich. (Ontario, N. Y.)
Primicorallina trentonensis Whitfield. (N. Y.)
Primitia centralis Ulrich. (Upper Trenton-Ky.)
Primitia mundula incisa Jones. (Quebec.)
Primitia nitida Ulrich. (Perryville.)
Primitia perminima Ulrich. (Upper Trenton-Ky.)
Primitiella ulrichi (Jones). (Collingwood.)
Prœtus brevimarginatus Weller. (N. J.)
Prœtus latimarginatus Weller. (N. J.)
Prolobella aviculoides (Hall). (N. Y.)
Prolobella hermione (Billings). (Quebec.)
Prolobella subelliptica (D'Orbigny). (N. Y.)
Prolobella subspatulata (Hall). (N. Y.)
Prolobella trentonensis (Conrad). (N. Y.)
Promopalæaster prenuntius Schuchert.
Protaræa vetusta (Hall). (N. Y., etc.)
Protocrisina perantiqua (Hall). (N. Y., Quebec.)
Pseudohornera dichotoma (Ulrich). (Quebec.)
Pseudosphærexochus trentonensis Clarke. (N. Y.)
Pterotheca anatiniformis (Hall). (N. Y.)
Pterotheca canaliculata (Hall). (N. Y.)
Pterotheca expansa (Emmons). (N. Y.)
Pterotheca undulata (Hall). (N. Y.)
Pterygometopus achates (Billings). (Ontario, N. Y., etc.)
Pterygometopus callicephalus (Hall). (N. Y., Ontario, etc.)
Pterygometopus carleyi rogersensis (Foerste). (Cynthiana.)
Pterygometopus eboraceus Clarke. (N. Y.)
Pterygometopus meta (Hall). (Wis.)
Pyrenomœus subcuneatus Ulrich. (Upper Trenton, Ky.; N. Y.)
Rafinesquina alternata (Emmons). (N. Y., Tenn., etc.)
Rafinesquina declivis (James). (Cynthiana.)
Rafinesquina deltoidea (Conrad). (N. Y.)
Rafinesquina tenuilineatea (Conrad). (N. Y.)
Rafinesquina winchesterensis Foerste. (Cynthiana.)
Rafinesquina winchesterensis filistriata Foerste. (Cynthiana.)
Raphistoma rotuloides (Hall). (N. Y.)

Receptaculites dixonensis Miller and Gurley. (Galena.)
Remopleurides striatulus Walcott. (N. Y.)
Rhaphanocrinus subnodosus (Walcott). (N. Y.)
Rhinidictya neglecta Ulrich. (Wilmore.)
Rhinidictya neglecta canadensis Ulrich. (Ky., Tenn.)
Rhynchonella sordida Hall. (N. Y.)
Rhynchotrema dentatum Hall. (N. Y., N. J.)
Rhynchotrema increbescens (Hall). (N. Y., Canada, etc.)
Rhynchotrema procteri Ulrich. (Flanagan.)
Rhynchotrema subtrigonale (Hall). (N. Y., Ky., etc.)
Rusophycus biloba Vanuxem. (N. Y., etc.)
Saccospongia danvillensis Ulrich. (Perryville.)
Saccospongia rudis Ulrich. (Cynthiana.)
Salpingostoma expansum (Hall). (N. Y., Canada.)
Scenidium(?) merope (Billings). (Canada, Ky.)
Schizambon canadensis (Ami). (Canajoharie, Collingwood.)
Schizambon? dodgei Winchell and Schuchert. (N. Y.)
Schizocrania filosa Hall. (Ontario, etc.)
Schizocrania(?) rudis Hall. (Hermitage.)
Schizocrania schucherti Hall and Clarke. (Upper Trenton-Ky.)
Schizocrinus nodosus Hall. (N. Y.)
Schizocrinus striatus Hall. (N. Y.)
Schizolopha textilis Ulrich. (Catheys.)
Schizotreta conica (Dwight). (N. Y.)
Schizotreta ovalis Hall and Clarke. (N. Y.)
Schizotreta pelopea (Billings). (Canada.)
Schuchertia stellata (Billings). (Ontario.)
Sinuites cancellatus (Hall). (N. Y., Ky., Tenn., etc.)
Sinuites cancellatus acutus (Sowerby?) Hall. (N. Y.)
Sinuites cancellatus corrugatus (Hall). (N. Y.)
Sinuites cancellatus trentonensis (Ulrich and Scofield). (Ohio, etc.)
Sinuites obesus (Ulrich). (Hermitage.)
Sinuites tenuissimus (Collie). (Pa.)
Solenopora compacta (Billings). (Russia, Canada, and U. S.)
Spatiopora? areolata Foord. (Quebec.)
Sphærocoryphe robustus Walcott. (N. Y.)
Sphenothallus angustifolius Hall. (Canajoharie.)
Spyroceras anellus (Conrad). (N. Y.)
Syproceras beauportense (Whiteaves). (Canada.)
Syproceras bilineatum (Hall). (N. Y., Canada, Minn.)
Spyroceras subannulatum (D'Orbigny). (N. Y.)
Stelidiocrinus argutus (Walcott). (N. Y.)
Steliella billingsi Hinde. (Ontario.)
Steliella crassa Hinde. (Ontario.)
Stellipora antheloidea Hall. (N. Y., Ontario.)
Stephanella sancta Hinde. (Collingwood.)
Stictopora elegantula Hall. (N. Y.)
Stictipora exigua Ulrich. (Quebec.)
Stomatopora arachnoidea (Hall). (N. Y., Ohio, Ky., etc.)
Streptelasma corniculum Hall. (N. Y., etc.)
Stromatocerium michiganense Parks. (Drift, Mich.)
Stromatocerium pustulosum (Safford). (Bigby, Catheys.)
Strophomena conradi Hall and Clarke. (N. Y.)
Strophomena hallie (Miller). (Upper Trenton-Ky.)
Strophomena hugginsportensis Foerste. (Upper Trenton-Ky.)
Strophomena thalia Billings. (Ontario.)
Strophomena trilobata (Owen). (Iowa, etc.)
Strophostylus textilis Ulrich and Scofield. (Flanagan.)
Strophostylus vicina Foerste. (Wilmore-Perryville.)
Subulites elongatus Conrad. (N. Y., Canada.)
Syproceras bilineatum frankfortense Foerste. (Hermitage.)
Tæniaster spinosus (Billings). (Canada.)
Teganium subsphericum (Walcott). (N. Y.)
Tetradella lunatifera (Ulrich). (Ky., Tenn., etc.)
Tetradella subquadrans Ulrich. (N. Y.)
Tetradium columnare (Hall). (N. Y., Tenn.)
Tetradium fibratum Safford. (Tenn., Ky., Va.)
Tetradium minus Safford. (Hermitage.)
Tetradium racemosum Raymond. (Ontario.)
Tetranota bidorsata (Hall). (N. Y., Ky., etc.)
Tetranota obsoleta Ulrich and Scofield. (Ky., etc.)
Trematis fragilis Ulrich. (Upper Trenton-Ky.)
Trematis montrealensis Billings. (Quebec.)
Trematis ottawaensis Billings. (Ontario, N. Y., etc.)
Trematis punctistriata Hall. (Hermitage.)
Trematis terminalis (Emmons). (N. Y.)
Triarthrus becki Green. (U. S. and Canada.)
Triarthrus billingsi Barrande. (Collingwood.)
Triarthrus canadensis Smith. (Collingwood.)
Triarthrus glaber Billings. (Collingwood.)
Triarthrus spinosus Billings. (Collingwood.)
Triplecia (Cliftonia) calhouni (Wilson). (Collingwood.)
Triplecia cuspidata Hall. (N. Y.)
Triplecia extans (Emmons). (N. Y.)
Triplecia nucleus Hall. (N. Y.)
Tripteroceras xiphias (Billings). (Ontario.)
Trocholites ammonius Conrad. (N. Y., Ky.)
Trocholites canadensis Hyatt. (Canada.)
Trochonema (Eunema) arctatum Ulrich. (Flanagan.)
Trochonema (Eunema) obsoletum Ulrich. (Flanagan.)
Trochonema subcrassum Ulrich and Scofield. (Flanagan.)
Trochonema umbilicatum (Hall). N. Y., Canada, etc.)
Turrilepas canadensis Woodward. (Collingwood.)
Ulrichia bivertex (Ulrich). (Ky., N. Y.)
Urasterella pulchella (Billings). (Ontario, N. Y.)
Vallatotheca unguiformis (Ulrich). (Flanagan.)
Vanuxemia hayniana (Safford). (Flanagan, Catheys.)
Vanuxemia nana (Ulrich). (Flanagan.)
Vanuxemia wortheni (Ulrich). (Galena.)
Vhiteavesia cancellata (Walcott). (Upper Trenton-Ky.)
Whiteavesia cincinnatiensis (Hall and Whitfield). (Upper Trenton-Ky.)
Whiteavesia kentonensis (Ulrich). (Upper Trenton-Ky.)
Whiteavesia oblonga (Ulrich). (Upper Trenton-Ky.)
Whiteavesia pulchella (Ulrich). (Upper Trenton-Ky.)
Whitella suborbicularis Weller. (N. J.)

Whitella subtruncata (Hall). (N. Y., N. J., Canada.)
Whitella ventricosa (Hall). (N. Y., Minn., Canada.)
Zitteloceras hallianum (D'Orbigny). (N. Y., Canada.)
Zygospira exigua (Hall). (N. Y.)
Zygospira obsoleta (Foerste). (Cynthiana.)
Zygospira recurvirostris (Hall). (N. Y., Ky., etc.)

TRENTON (PROSSER) OF UPPER MISSISSIPPI VALLEY.

Allodesma subellipticum (Ulrich).
Ambonychia affinis Ulrich.
Ambonychia amygdalina Hall.
Ambonychia bellistriata Hall.
Amphilichas cucullus (Meek and Worthen).
Amphilichas robbinsi (Ulrich).
Aparchites minutissimus trentonensis Ulrich.
Archinacella semicarinata Ulrich and Scofield.
Archinacella valida (Sardeson).
Arthroclema armatum Ulrich.
Arthroclema pulchellum Billings.
Arthropora bifurcata Ulrich.
Arthropora reversa Ulrich.
Aspidopora elegantula (Ulrich).
Batostoma humile Ulrich.
Bellerophon platystoma (Meek and Worthen).
Bellerophon similis Ulrich and Scofield.
Bollia subæquata Ulrich.
Bollia unguloidea Ulrich.
Bucania elliptica Ulrich and Scofield.
Bucania lindsleyi (Safford).
Bucania sublata Ulrich and Scofield.
Byssonychia intermedia (Meek and Worthen).
Bythocypris cylindrica (Hall).
Calymene senaria Conrad.
Cameroceras hennepini Clarke.
Catazyga uphami (Winchell and Schuchert).
Ceramoporella interporosa Ulrich.
Ceraurus pleurexanthemus Green.
Chasmatopora reticulata (Hall).
Clathrospira conica Ulrich and Scofield.
Clidophorus consuetus Ulrich.
Clionychia undata (Emmons).
Clitambonites diversus (Shaler).
Clitambonites diversus altissimus Winchell and Schuchert.
Cœlocaulus neglectus Ulrich and Scofield.
Cœloclema trentonensis (Ulrich).
Constellaria varia Ulrich.
Corydocephalus wesenbergensis paulianus (Clarke).
Corynotrypa delicatula (James).
Crania trentonensis Hall.
Ctenobolbina obliqua Ulrich.
Ctenodonta alta (Hall).
Ctenodonta carinata Ulrich.
Ctenodonta intermedia (Ulrich).
Ctenodonta oviformis Ulrich.
Ctenodonta subnasuta Ulrich.
Cuneamya truncatula Ulrich.
Cybeloides? winchelli (Clarke).
Cycloceras olorus (Hall).
Cyclonema varicosum Hall.
Cyclospira bisulcata (Emmons).
Cyphotrypa acervulosa (Ulrich).
Cyrtodonta affinis Ulrich.
Cyrtodonta gibbera Ulrich.
Cyrtodonta grandis (Ulrich).
Cyrtodonta grandis germana (Ulrich).
Cyrtodonta parva Ulrich.
Cyrtolites ornatus minor Ulrich and Scofield.
Cytherella? rugosa (Jones).
Cytherella? rugosa arcta Ulrich.
Cyrtospira wykoffensis Ulrich and Scofield.
Dalmanella rogata (Sardeson).
Dalmanella testudinaria (Dalman).
Dekayia trentonensis (Ulrich).
Dianulites petropolitana Dybowski.
Diastoporina flabellata Ulrich.
Dinobolus(?) parvus (Whitfield).
Dinorthis meedsi (Winchell and Schuchert).
Dinorthis meedsi germana (Winchell and Schuchert).
Diplotrypa limitaris Ulrich.
Diplotrypa neglecta Ulrich.
Eccyliomphalus subrotundus Ulrich and Scofield.
Eccyliopterus owenanus (Meek and Worthen).
Edrioaster bigsbyi (Billings).
Endoceras proteiforme Hall.
Endodesma compressum Ulrich.
Endodesma cuneatum Ulrich.
Eoharpes minnesotensis (Clarke).
Eoharpes rutrellum (Clarke).
Eridotrypa ædilis (Eichwald).
Eridotrypa ædilis minor (Ulrich).
Eridotrypa exigua Ulrich.
Eurychilina ventrosa Ulrich.
Favositella laxata (Ulrich).
Fusispira angusta Ulrich and Scofield.
Fusispira angusta subplana Ulrich and Scofield.
Fusispira convexa Ulrich and Scofield.
Fusispira elongata Hall.
Fusispira inflata (Meek and Worthen).
Fusispira intermedia Ulrich and Scofield.
Fusispira nobilis Ulrich and Scofield.
Fusispira planulata Ulrich and Scofield.
Fusispira subbrevis Ulrich and Scofield.
Fusispira subfusiformis (Hall).
Fusispira vittata (Hall).
Goldius lunatus (Billings).
Graptodictya proava (Eichwald).
Gyronema percarinata (Hall).
Halliella labiosa Ulrich.
Hallopora ampla (Ulrich).
Hallopora dumalis (Ulrich).
Hallopora goodhuensis (Ulrich).
Hallopora multitabulata (Ulrich).
Halloporina crenulata (Ulrich).
Haploconus galenensis (Clarke).
Hebertella frankfortensis Foerste.
Helcionopsis subcarinata Ulrich and Scofield.
Helopora mucronata Ulrich.
Helopora quadrata Ulrich.
Hemiphragma irrasum (Ulrich).
Hemiphragma ottawaense (Foord).
Hemiphragma tenuimurale Ulrich.
Hindia parva Ulrich.
Holopea appressa Ulrich and Scofield.
Holopea excelsa Ulrich and Scofield.
Holopea paludiniformis Hall.
Holopea pyrene Billings.
Holopea similis Ulrich.
Holopea supraplana Ulrich and Scofield.
Homotrypa callosa Ulrich.
Homotrypa? similis Foord.

Homotrypa subramosa insignis (Ulrich).
Homotrypella hospitalis crassa (Ulrich).
Homotrypella mundula Ulrich.
Homotrypella? ovata Ulrich.
Hormotoma bellicincta (Hall).
Hormotoma gracilis (Hall).
Hormotoma(?) major (Hall).
Hormotoma salteri (Ulrich).
Hormotoma trentonensis Ulrich and Scofield.
Illænus americanus (Billings).
Ischadites iowensis (Owen).
Isotelus gigas? Dekay.
Isotelus maximus? Locke.
Jonesella obscura Ulrich.
Kokenospira costalis Ulrich and Scofield.
Lichenaria minor Ulrich.
Licrophycus ottawaense Billings.
Lingula? canadensis Billings.
Lingula (*Palæoglossa*) *deflecta* (Winchell and Schuchert).
Lingula (*Palæoglossa*) *hurlbuti* (N. H. Winchell).
Lingula (*Pseudolingula*) *iowensis* (Owen).
Lingula riciniformis Hall.
Lingula riciniformis galenensis Winchell and Schuchert.
Lingulasma galenense Winchell and Schuchert.
Liospira americana Billings.
Liospira angustata Ulrich.
Liospira progne Billings.
Lophospira bicincta Hall.
Lophospira elevata Ulrich and Scofield.
Lophospira fillmorensis Ulrich and Scofield.
Lophospira medialis Ulrich and Scofield.
Lophospira perforata Ulrich and Scofield.
Lyrodesma cannonense Ulrich.
Maclurites crassus macra (Ulrich and Scofield).
Mælonoceras neleus (Hall).
Mesotrypa discoidea Ulrich.
Mesotrypa quebecensis (Ami).
Mesotrypa? rotunda Ulrich.
Mitoclema? mundulum Ulrich.
Modiolodon patulus Ulrich.
Modiolopsis mytiloides Hall.
Modiolopsis nana Ulrich.
Modiolopsis oweni Ulrich.
Monotrypa intabulata Ulrich.
Monticulipora arborea Ulrich.
Monticulipora? cannonensis Ulrich.
Nematopora conferta Ulrich.
Nematopora consueta Bassler.
Nematopora granosa Ulrich.
Nematopora ovalis Ulrich.
Nileus vigilans (Meek and Worthen).
Odontopleura parvula (Walcott).
Oncoceras douglassi Clarke.
Oncoceras exiguum (Billings).
Oncoceras minnesotense Clarke.
Ophiletina sublaxa sequens Ulrich and Scofield.
Orthoceras beltrami Clarke.
Orthoceras junceum Hall.
Orthodesma schucherti Ulrich.
Oxydiscus subacutus Ulrich.
Pachydictya acuta (Hall).
Pachydictya elegans Ulrich.
Pachydictya magnipora Ulrich.
Pachydictya pumila Ulrich.
Pachydictya pumila sublata Ulrich.
Parastrophia hemiplicata Hall.
Parastrophia hemiplicata rotunda Winchell and Schuchert.
Parastrophia scofieldi (Winchell and Schuchert).
Pasceolus globosus Billings.
Petrocrania ulrichi (Hall and Clarke).
Phænopora incipiens Ulrich.
Pholidops trentonensis minor Winchell and Schuchert.
Phragmolites dyeri cellulosus (Ulrich and Scofield).
Plectambonites gibbosus Winchell and Schuchert.
Plectambonites minnesotensis (Sardeson).
Plectambonites sericeus Sowerby.
Plectorthis plicatella trentonensis Foerste.
Plethocardia suberecta Ulrich.
Pleurocystites squamosus Billings.
Podolithus anomalocrinus Sardeson.
Podolithus dendrocrinus Sardeson.
Podolithus eucheirocrinus Sardeson.
Poterioceras apertum Whiteaves.
Prasopora affinis Foord.
Prasopora grandis (Ulrich).
Prasopora insularis Ulrich.
Prasopora insularis fillmorensis Ulrich.
Prasopora oculata Foord.
Prasopora selwyni (Nicholson).
Prasopora simulatrix Ulrich.
Primitia micula Ulrich.
Primitia uphami Ulrich.
Prolobella striatula Ulrich.
Protaræa vetusta (Hall).
Psiloconcha minnesotensis Ulrich.
Pterygometopus achates (Billings).
Pterygometopus callicephalus (Hall).
Pterygometopus schmidti Clarke.
Rafinesquina alternata (Emmons).
Rafinesquina deltoidea (Conrad).
Raphistomina rugata Ulrich and Scofield.
Receptaculites oweni Hall.
Rhinidictya minima Ulrich.
Rhinidictya minima modesta Ulrich.
Rhinidictya mutabilis (Ulrich).
Rhynchotrema increbescens (Hall).
Rhynchotrema increbescens laticostatum (Winchell and Schuchert).
Rhytimya sinuata Ulrich.
Saffordia modesta (Ulrich).
Salpingostoma sculptile Ulrich and Scofield.
Scenella affinis Ulrich and Scofield.
Scenella affinis obsoleta Ulrich and Scofield.
Scenella radialis Ulrich and Scofield.
Schizotreta pelopea (Billings).
Schmidtella affinis Ulrich.
Schmidtella incompta subæqualis Ulrich.
Sinuites cancellatus (Hall).
Sinuites cancellatus trentonensis (Ulrich and Scofield).
Sphenolium striatum Ulrich.
Stomatopora arachnoidea (Hall).
Streptelasma corniculum Hall.
Strophomena billingsi Winchell and Schuchert.
Strophomena emaciata Winchell and Schuchert.
Strophomena scofieldi Winchell and Schuchert.
Strophomena trentonensis Winchell and Schuchert.
Strophomena trilobata (Owen).
Strophostylus textilis Ulrich and Scofield.
Subulites pergracilis Ulrich and Scofield.

Tetradella lunatifera (Ulrich).
Tetranota bidorsata (Hall).
Tetranota obsoleta Ulrich and Scofield.
Tetranota sexcarinata Ulrich and Scofield.
Trematis ottawaensis Billings.
Tripteroceras planoconvexum (Hall).
Trochonema altum Ulrich and Scofield.
Trochonema fragile Ulrich and Scofield.
Trochonema (*Eunema*) *robbinsi* Ulrich and Scofield.
Trochonema (*Eunema*) *salteri* Ulrich and Scofield.
Trochonema (*Eunema*) *simile* Ulrich and Scofield.
Trochonema subcrassum Ulrich and Scofield.
Trochonema umbilicatum (Hall).
Vanuxemia abrupta Ulrich.
Vanuxemia hayniana (Safford).
Whiteavesia subcarinata (Ulrich).
Whitella præcipta Ulrich.
Whitella subcarinata Ulrich.
Whitella truncata Ulrich.
Zygospira recurvirostris (Hall).

TRENTON (STEWARTVILLE) OF UPPER MISSISSIPPI VALLEY.

Cœlocaulus œhlerti Ulrich and Scofield.
Fusispira inflata (Meek and Worthen).
Fusispira inflata ventricosa (Hall).
Fusispira subbrevis Ulrich and Scofield.
Hormotoma(?) *major* (Hall).
Hormotoma trentonensis Ulrich and Scofield.
Lophospira augustina (Billings).
Lophospira augustina minnesotensis Ulrich and Scofield.
Maclurina cuneata (Whitfield).
Maclurina manitobensis (Whiteaves).
Maclurina subrotunda (Whitfield).
Maclurites crassus (Ulrich and Scofield).
Tripteroceras lambi? Whiteaves.
Trochonema umbilicatum (Hall).

TRENTON (CURDSVILLE) OF OHIO VALLEY AND CANADA.

Aesiocystites priscus Miller and Gurley.
Agelacrinites dicksoni Billings.
Amygdalocystitis florealis Billings.
Amygdalocystites florealis lævis Billings.
Amygdalocystites huntingtoni Wetherby.
Amygdalocystites radiatus Billings.
Amygdalocystites tenuistriatus Billings.
Archæocrinus desideratus W. R Billings.
Archæocrinus lacunosus (Billings).
Archæocrinus marginatus (Billings).
Archæocrinus microbasilis (Billings).
Archæocrinus pyriformis (Billings).
Archinacella cingulata Ulrich.
Astrocystites ottawaensis Whiteaves.
Astroporites ottawaensis Lambe.
Atelocystites huxleyi Billings.
Bathyurus ingalli Raymond.
Belemnocystites wetherbyi Miller and Gurley.
Carabocrinus ovalis Miller and Gurley.
Carabocrinus radiatus Billings.
Carabocrinus vancortlandti Billings.
Ceraurinus trentonensis Barton.
Cheirocrinus logani (Billings).
Cheirocrinus logani gracilis (Billings).
Cleiocrinus regius Billings.
Cleiocrinus sculptus Springer.
Comarocystites punctatus Billings.
Cremacrinus articulosus (Billings).
Cremacrinus inæqualis (Billings).
Cremacrinus rugosus (Billings).
Ctenodonta subrotunda (Ulrich).
Cupulocrinus conjugans (Billings).
Cupulocrinus humilis (Billings).
Cupulocrinus jewetti (Billings).
Cupulocrinus jewetti kentuckiensis Springer.
Cyclocystoides halli Billings.
Dendrocrinus acutidactylus Billings.
Dendrocrinus proboscidiatus Billings.
Dinorthis pectinella (Hall).
Edrioaster bigsbyi (Billings).
Endoceras clarki (Wetherby).
Endoceras gracile (Wetherby).
Eoharpes dentoni (Billings).
Glaucocrinus falconeri Parks and Alcock.
Glyptocrinus circumcarinatus Parks.
Glyptocrinus mercerensis Miller and Gurley.
Glyptocrinus ornatus Billings.
Glyptocrinus ramulosus Billings.
Glyptocystites multiporus Billings.
Heterocrinus milleri Wetherby.
Heterocrinus tenuis Billings.
Hybocrinus conicus Billings.
Hybocrinus tumidus Billings.
Hybocystites eldonensis (Parks).
Hybocystites problematicus Wetherby.
Lophospira bicincta (Hall).
Ohiocrinus bellevillensis (W. R. Billings).
Omospira alexandra (Billings).
Orthis tricenaria Conrad.
Ottawacrinus billingsi Springer.
Ottawacrinus typus W. R. Billings.
Palæocrinus angulatus (Billings).
Palæocrinus pulchellus Billings.
Palæocrinus rhombiferus Billings.
Periglyptocrinus billingsi Wachsmuth and Springer.
Periglyptocrinus priscus (Billings).
Petraster rigidus (Billings).
Plectambonites curdsvillensis Foerste.
Pleurocystites filitextus Billings.
Pleurocystites mercerensis Miller and Gurley.
Pleurocystites squamosus Billings.
Pleurocystites squamosus robustus (Billings).
Porocrinus conicus Billings.
Porocrinus kentuckiensis Miller and Gurley.
Protaster whiteavesiana Parks.
Protaxocrinus elegans (Billings).
Protaxocrinus lævis (Billings).
Raphistomina denticulata Ulrich.
Reteocrinus alveolatus Miller and Gurley.
Reteocrinus stellaris Billings.
Rhynchotrema subtrigonale (Hall).
Salpingostoma buelli kentuckiensis Ulrich and Scofield.
Sinuites cancellatus (Hall).
Sinuites pervolutus (Ulrich and Scofield).
Stenaster salteri Billings.
Streptelasma corniculum Hall.
Tæniaster cylindricus (Billings).
Tetranota obsoleta Ulrich.
Thresherodiscus ramosus Foerste.
Vanuxemia cardinata Ulrich.
Vanuxemia gibbosa Ulrich.
Zygospira recurvirostris Hall.

TRENTON (RYSEDORPH CONGLOMERATE) OF EASTERN NEW YORK.

Ampyx (*Lonchodomas*) *hastatus* Ruedemann.
Aparchites minutissimus robustus Ruedemann.
Bolboporites americanus Billings.
Bollia cornucopiæ Ruedemann.
Bythocypris cylindrica (Hall).
Calymene senaria Conrad.
Carinaropsis carinata Hall.
Ceraurus pleurexanthemus (Green).
Christiania trentonensis Ruedemann.
Clathrospira subconica Hall.
Climacograptus scharenbergi Lapworth.
Conularia trentonensis Hall.
Corynotrypa inflata (Hall)
Cyphaspis matutina Ruedemann
Cyrtospira attenuata Ruedemann.
Dalmanella testudinaria var. (Dalman).
Dinorthis pectinella (Emmons).
Diplograptus foliaceus (Murchison).
Eccyliopterus spiralis Ruedemann
Eurychilina bulbifera Ruedemann
Eurychilina dianthus Ruedemann.
Eurychilina obliqua Ruedemann.
Eurychilina reticulata Ulrich.
Eurychilina? solida Ruedemann.
Eurychilina subradiata rensselærica Ruedemann.
Gerasaphes ulrichana (Clarke).
Goldius lunatus (Billings).
Hallopora multitabulata (Ulrich).
Holopea paludiniformis Hall.
Hyolithes rhine Ruedemann.
Illænus americanus Billings.
Isochilina armata pygmæa Ruedemann.
Isotelus maximus Locke.
Leperditia fabulites Conrad.
Leperditia resplendens Ruedemann.
Leptæna rhomboidalis var. (Wilckens).
Liospira americana (Billings).
Liospira subtilistriata (Hall).
Lophospira bicincta (Hall).
Lophospira perangulata (Hall).
Macronotella fragaria Ruedemann.
Macronotella ulrichi Ruedemann.
Orthis tricenaria Conrad.
Parastrophia hemiplicata Hall.
Pholidops trentonensis Hall.
Phragmolites compressus (Conrad).
Pianodema subæquata perveta (Conrad).
Platystrophia biforata var. Schlotheim.
Plectambonites pisum Ruedemann.
Plectambonites sericeus var. (Sowerby).
Prasopora simulatrix orientalis Ulrich.
Primitia jonesi (Ruedemann).
Prolobella aviculoides (Hall).
Pterygometopus achates (Billings).
Pterygometopus callicephalus Hall.
Pterygometopus eboraceus Clarke.
Rafinesquina alternata? (Emmons).
Rafinesquina deltoidea (Conrad).
Remopleurides linguatus Ruedemann.
Remopleurides tumidus Ruedemann.
Schmidtella crassimarginata ventrilabiata Ruedemann.
Sinuites cancellata (Hall).
Siphonotreta? minnesotensis Hall and Clarke.
Sphærocoryphe major Ruedemann.
Spyroceras bilineatum (Hall).
Spyroceras subannulatum (Hall).
Streptelasma corniculum Hall.
Thaleops ovata Conrad.
Tretaspis diademata Ruedemann.
Tretaspis reticulatus Ruedemann.
Triplecia nucleus Hall.
Trochonema umbilicatum (Hall).
Whitella ventricosa (Hall).
Zitteloceras hallianum (D'Orbigny).
Zygospira exigua (Hall).
Zygospira recurvirostris Hall.

TRENTON (SNAKE HILL) OF EASTERN NEW YORK.

Archinacella orbiculata (Hall).
Azygograptus? campanulata Nicholson.
Calymene senaria Conrad.
Carabocrinus radiatus Billings.
Chaunograptus rectilinea Ruedemann.
Clathrospira subconica Hall.
Clidophorus foerstei Ruedemann.
Clidophorus ventricosus Ruedemann.
Climacograptus caudatus Lapworth.
Climacograptus (*Mesograptus*) *putillus* Hall.
Climacograptus sharenbergi Lapworth.
Climacograptus spiniferus Ruedemann.
Clitambonites diversus (Shaler).
Conularia trentonensis multicosta Ruedemann.
Corynoides calicularis Nicholson.
Corynoides curtus Lapworth.
Corynoides curtus comma Ruedemann.
Corynoides gracilis Hopkinson.
Cryptolithus tessellatus (Greene).
Cryptograptus tricornis insectiformis Ruedemann.
Ctenobolbina ciliata (Emmons).
Ctenobolbina ciliata cornuta Ruedemann.
Ctenobolbina subrotunda Ruedemann.
Ctenodonta declivis Ruedemann.
Ctenodonta levata (Hall).
Ctenodonta prosseri Ruedemann.
Ctenodonta radiata Ruedemann.
Ctenodonta recta Ruedemann.
Ctenodonta subcuneata Ruedemann.
Cuneamya acutifrons Ulrich.
Cyclonema cushingi Ruedemann.
Cyclonema montrealense Billings.
Cyclospira bisulcata (Emmons).
Dalmanella testudinaria (Dalman.)
Dicranograptus nicholsoni Hopkinson.
Dinorthis (*Plæsiomys*) *retrorsa* (Salter).
Diplograptus (*Glyptograptus*) *amplexicaulis* Hall.
Diplograptus amplexicaulis pertenuis Ruedemann.
Discophyllum peltatum Hall.
Edrioaster saratogensis Ruedemann.
Eoharpes ottawaensis (Billings).
Eopolychætus albaniensis Ruedemann.
Glossograptus (*Orthograptus*) *quadrimucronatus* var. *pertenuis* Hall.
Heterocrinus? gracilis Hall.
Isotelus gigas DeKay.
Lasiograptus (*Thysanograptus*) *eucharis* (Hall).
Lepidocoleus jamesi (Hall and Whitfield).
Leptobolus insignis Hall.
Lingula curta Conrad.
Lophospira uniangulata abbreviata (Hall).
Lyrodesma schucherti Ruedemann.
Odontopleura trentonensis Hall.

Orthoceras lineolatum (Hall).
Orthoceras tenuitextum (Hall).
Orthodesma subcarinatum Ruedemann.
Pachydictya acuta (Hall).
Paleschara ulrichi Ruedemann.
Parastrophia hemiplicata Hall.
Pholidops trentonensis Hall.
Platystrophia biforata var. (Schlotheim)
Plectambonites sericeus (Sowerby).
Plectorthis plicatella Hall.
Pleurotomaria lenticularis (Hall).
Pollicipes siluricus Ruedemann.
Pontobdellopsis cometa Ruedemann.
Proetus undulostriatus (Hall).
Pterotheca canaliculata (Hall).
Pterygometopus callicephalus (Hall).
Rafinesquina alternata (Emmous).
Rhynchotrema increbescens Hall.
Schizocrania filosa Hall.
Schizocrinus nodosus Hall.
Sinuites cancellatus (Hall).
Solenomya? *insperata* Ruedemann.
Spyroceras bilineatum (Hall).
Technophorus cancellatus Ruedemann.
Triarthrus becki Green.
Turrilepas? *filosus* Ruedemann.
Whiteavesia cincta Ruedemann.
Whiteavesia cumingsi Ruedemann.
Whitella elongata Ruedemann.
Zygospira recurvirostris (Hall).

TRENTON (SCHENECTADY) OF EAST CENTRAL NEW YORK.

Climacograptus typicalis Hall.
Conularia trentonensis multicosta Ruedemann.
Cyptolithus tesselatus (Greene).
Dalmanella testudinaria (Dalman).
Dictyonema multiramosum Ruedemann.
Diplograptus vespertinus (Ruedemann).
Dolichopterus frankfortensis Clarke and Ruedemann.
Dolichopterus latifrons Clarke and Ruedemann.
Eurypterus megalops Clarke and Ruedemann.
Eurypterus pristinus Clarke and Ruedemann.
Eurypterus? (*Dolichopterus*) *stellatus* Clarke and Ruedemann.
Eusarcus longiceps Clarke and Ruedemann.
Eusarcus triangulatus Clarke and Ruedemann.
Hughmilleria magna Clarke and Ruedemann.
Isotelus gigas Dekay.
Lasiograptus (*Thysanograptus*) *eucharis* (Hall).
Leptobolus insignis Hall.
Lingula (*Pseudolingula*) *rectilateralis* Emmons.
Mastigograptus simplex Walcott.
Plectorthis plicatella Hall.
Pterygotus (*Eusarcus?*) *nasutus* Clarke and Ruedemann.
Pterygotus prolificus Clarke and Ruedemann.
Rafinesquina ulrichi James.
Saffordia ulrichi Ruedemann.
Sphenophycus latifolius (Hall).
Spyroceras bilineatum (Hall).
Stylonurus? *limbatus* Clarke and Ruedemann.
Tæniaster schohariæ Ruedemann.
Triarthus becki Green.
Trocholites ammonius Conrad.

TRENTON (MACASTY) OF ANTICOSTI ISLAND, QUEBEC.

Climacograptus spiniferus Ruedmann.
Climacograptus typicalis magnificus Twenhofel.
Leptobolus insignis Hall.
Triarthrus becki macastyensis Twenhofel.

MOHAWKIAN (JACKSONBURG) OF NEW JERSEY.

(Species with * are from Black River portion; rest are of Trenton age.)

Amphilichas trentonensis (Hall).
Archinacella patelliformis (Hall).
Bucania punctifrons Emmons.
Bumastus milleri (Billings).
Calymene senaria Conrad.
**Camarella inornata* Weller.
**Ceraurus pleurexanthemus* Green.
Chasmatopora fenestrata (Hall).
Cleidophorus neglectus Hall.
Conularia trentonensis Hall.
Cryptolithus tesselatus Green.
**Ctenodonta jerseyensis* Weller.
**Ctenodonta nasuta* (Hall).
Cyphaspis trentonensis Weller.
Cyrtodonta billingsi Ulrich.
Cyrtodonta canadensis Billings.
Cyrtolites ornatus minor Ulrich and Scofield.
Dalmanella testudinaria (Dalman).
Dinorthis pectinella (Emmons).
Eccyliomphalus trentonensis (Conrad).
Encrinurus trentonensis Walcott.
Eoharpes ottawaensis (Billings).
Goniophora carinatus (Hall).
Hindia parva Ulrich.
Hormotoma salteri Ulrich.
Isotelus gigas Dekay.
**Leperditia fabulites* (Conrad).
Lingula riciniformis Hall.
Liospira micula (Hall).
Lophospira medialis Ulrich and Scofield.
**Lophospira oweni* Ulrich and Scofield.
Modiolopsis depressa Weller.
Modiolopsis faba (Conrad).
**Modiolopsis jerseyensis* Weller.
Nyctopora billingsi Nichols.
Orbiculoidea lamellosa (Hall).
**Orthis tricenaria* Conrad.
Orthoceras tenuistriatum (Hall).
Orthodesma canaliculatum Ulrich.
Parastrophia hemiplicata (Hall).
Pianodema subaequata Conrad.
Platystrophia biforata var. (Schlotheim).
Plectambonites sericeus (Sowerby).
Plectorthis plicatella (Hall).
Prasopora simulatrix Ulrich.
Proetus brevimarginatus Weller.
Proetus latimarginatus Weller.
Protowarthia cancellata (Hall).
**Pseudospherexochus trentonensis* Clarke.
Pteryometopus callicephalus (Hall).
**Pterygometopus intermedius* (Walcott).
**Ptychopyge jerseyensis* Weller.
Rafinesquina alternata (Emmons).
**Raphistoma peracuta* Ulrich and Scofield.
Rhychotrema increbescens (Hall).
**Romingeria?* *trentonensis* Weller.
**Scenidium anthonensis* Sardeson.

Schizocrania filosa (Hall).
Solenopora compacta Billings.
Streptelasma corniculum Hall.
Strophomena incurvata (Shepard).
Tetranota bidorsata (Hall).
Whitella subtruncata (Hall).
Zygospira recurvirostris (Hall).

MOHAWKIAN OF BAFFIN LAND.

(This list probably includes some Richmond species.)

Bellerophon similis Ulrich and Scofield.
Calapoecia anticostiensis Billings.
Ceraurus pleurexanthemus Green.
Clathrospira conica Ulrich and Scofield.
Ctenodonta baffinensis Schuchert.
Ctenodonta carpenteri Schuchert.
Ctenodonta frobisherensis Schuchert.
Ctenodonta subnasuta Ulrich.
Cycloceras olorus baffinensis Schuchert.
Cyrtoceras baffinensis Schuchert.
Cyrtoceras cornulum Schuchert.
Cyrtoceras manitobense Whiteaves.
Cyrtodonta gibbera Ulrich.
Cyrtodonta sillimanensis Schuchert.
Dalmanella testudinaria (Dalman).
Dinorthis meedsi Winchell and Schuchert.
Dinorthis meedsi arctica (Schuchert).
Endoceras proteiforme (Hall).
Eurystomites plicatus Whiteaves.
Fusispira inflata (Meek and Worthen).
Fusispira nobilis Ulrich and Scofield.
Halysites gracilis (Hall).
Hebertella bellirugosa (Conrad).
Hebertella borealis (Billings).
Holopea arctica Schuchert.
Illænus americanus (Billings).
Ischadites iowensis (Owen).
Isotelus gigas Dekay.
Kokenia costalis Ulrich and Scofield.
Lichenocrinus affinis Miller.
Liospira americana (Billings).
Liospira larvata (Salter).
Lophospira spironema Ulrich and Scofield.
Lyellia affinis (Billings).
Maclurites crassus (Ulrich and Scofield).
Maclurina cuneata (Whitfield).
Maclurina manitobensis (Whiteaves).
Modiolodon arctica Schuchert.
Nileus vigilans (Meek and Worthen).
Oncoceras arcticum Schuchert.
Oncoceras exiguum (Billings).
Oncoceras tumidum Schuchert.
Orthis tricenaria Conrad.
Orthoceras porteri Schuchert.
Orthoceras scalariformis Schuchert.
Parastrophia hemiplicata Hall.
Plasmopora lambii Schuchert.
Plectorthis plicatella (Hall).
Porocrinus shawi Schuchert.
Pterygometopus goodridgii Schuchert.
Receptaculites oweni Hall.
Rhynchotrema increbescens (Hall).
Saffordia modesta Ulrich.
Seelya(?) ulrichi Schuchert.
Sinuites pervolutus Ulrich and Scofield.
Spyroceras bilineatum (Hall).
Streptelasma corniculum Hall.
Tetranota obsoleta Ulrich and Scofield.
Trochonema (Eunema) robbinsi Ulrich and Scofield
Trochonema umbilicatum (Hall).
Vanuxemia abrupta Ulrich.
Vanuxemia baffinensis Schuchert.
Whiteavesia symmetrica Schuchert.
Whitella arctica Schuchert.

CINCINNATIAN (UTICA) OF NEW YORK, ETC.

(See also Eden fauna, Fulton division.)

Asaphus latimarginatus Hall.
Buthotrephis ramulosa Miller.
Buthotrephis subnodosa (Hall).
Callograptus compactus (Walcott).
Cornulites immaturus Hall.
Cryptolithus tessellatus Green.
Ctenodonta nuculiformis (Hall).
Cyathophycus reticulatus Walcott.
Cyathophycus(?) walcotti (Rauff).
Dicranograptus nicholsoni Hopkinson.
Discophycus typicalis Walcott.
Echinognathus clevelandi (Walcott).
Elpe radiata (Ulrich).
Lasiograptus bimucronatus timidus Ruedemann.
Leptobolus insignis Hall.
Leptograptus annectans (Walcott).
Leptograptus flaccidus (Hall).
Lingula (Pseudolingula) rectilateralis (Emmons).
Mastigograptus simplex (Walcott).
Mastigograptus tenuiramosus (Walcott).
Mesopalæaster(?) lanceolatus Schuchert.
Orthoceras coralliferum Hall.
Orthoceras oneidaense Walcott.
Pleurograptus linearis (Carruthers).
Pterinea insueta (Emmons).
Schizocrania filosa (Hall).
Triarthrus becki Green.
Whiteavesia cancellata (Walcott).
Zygospira modesta (Say).

CINCINNATIAN (EDEN) OF APPALACHIAN AND O VALLEYS.

(Economy=E.; Southgate=S.; McMicken=M.; I
dian Ladder=I.; Fulton (Utica)=F.; Fran
fort=Fr.)

Alepidaster fimbriatus (Ulrich). (E.)
Amplexopora persimilis Nickles. (E.)
Amplexopora petasiformis (Nicholson). (E.,S.,M
Amplexopora petasiformis welchi (James). (E., S
M.)
Amplexopora septosa (Ulrich). (M.)
Aparchites minutissimus (Hall). (E., S., M.)
Archinacella patelliformis (Hall). (E., S., M.)
Arthraria biclavata Miller. (E., S., M.)
Arthropora cleavelandi (James). (E., S., M.)
Arthrostylus tenuis (James). (E., S., M., I.)
Asaphoidichnus dyeri Miller. (E.)
Asaphoidichnus trifidus Miller. (E.)
Asaphus gigas Dekay. (E., S., M.)
Asaphus maximus Locke. (E., S., M.)
Aspidopora areolata Ulrich. (F.)
Aspidopora eccentrica (James). (S.)
Aspidopora newberryi (Nicholson). (F., E.)
Atactopora angularis Ulrich and Bassler. (E.)
Atactopora hirsuta Ulrich. (E., S., M.)
Atactopora intermedia Cumings and Galloway. (M.)

Atactoporella newportensis Ulrich. (E.)
Atactoporella typicalis Ulrich. (E.)
Batostoma implicatum (Nicholson). (E., S., M.)
Batostoma jamesi (Nicholson). (E., S., M.)
Berenicea vesiculosa Ulrich. (M.)
Blastophycus diadematum Miller and Dyer. (E.)
Bollia persulcata (Ulrich). (M.)
Buthotrephis ramulosus Miller. (F.)
Byssonychia vera Ulrich. (E., S., M.)
Bythocypris cylindica (Hall). (F., E., S., M.)
Bythopora arctipora (Nicholson). (E., S. M.)
Bythopora parvula (James). (M.)
Calymene granulosa (Foerste). (E., S., M., I.)
Ceramoporella distincta Ulrich. (E., S., M.)
Ceramoporella granulosa milfordensis (James). (E., S., M.)
Ceramoporella ohioensis (Nicholson). (E., S., M.)
Ceramoporella triloba Cumings and Galloway. (M.)
Ceramoporella tubulosa Cumings and Galloway. (M.)
Ceratocephala cincinnatiensis (Meek). (E., S., M.)
Ceratopsis chambersi (Miller). (F., E., S., M., I.)
Chasmotopora variolata (Ulrich). (M.)
Chaunograptus gemmatus Ruedemann. (E.)
Chlœphycus plumosum Miller and Dyer.
Clidophorus ellipticus (Ulrich). (E.)
Clidophorus fabula (Hall). (F., E., S., M.)
Clidophorus planulatus (Conrad). (E., S., M.)
Climacograptus putillus (Hall). (F.)
Climacograptus typicalis (Hall). (F., E., S., M., Fr.)
Cœloclema alternatum (James). (M.)
Cœloclema commune (Ulrich). (E., S.)
Constellaria florida prominens Ulrich. (M.)
Corynotrypa delicatula (James). (E., S., M.)
Crania albersi Miller and Faber. (E.)
Crania dyeri Miller. (E.)
Crania scabiosa Hall. (E., S., M.)
Crania socialis Ulrich.
Crepipora? solida Ulrich. (E.)
Crepipora venusta (Ulrich). (E.)
Cryptolithus bellulus (Ulrich). (E., I.)
Cryptolithus tessellatus Green. (F., E., S., M., Fr.)
Ctenobolbina alata Ulrich. (M.)
Ctenobolbina bispinosa Ulrich. (M.)
Ctenobolbina ciliata (Emmons). (E., S., M.)
Ctenobolbina curta (Ulrich). (M.)
Ctenodonta filistriata Ulrich. (E., S.)
Ctenodonta obliqua (Hall). (F., E., S., M.)
Ctenodonta pectunculoides (Hall). (E., S.)
Ctenodonta perminuta Ulrich. (E., S., M.)
Cuneamya parva Miller. (S.)
Cycloconcha mediocardinalis Miller. (S.)
Cycloconcha ovata Ulrich. (S.)
Cyclora depressa Ulrich. (F., E., S., M.)
Cyclora hoffmani Miller. (F., E., S., M.)
Cyclora minuta Hall. (F., E., S., M.)
Cyclora parvula Hall. (F., E., S., M.)
Cymatonota productifrons Ulrich. (E.)
Cyrtoceras magister Miller. (S.)
Cyrtoceras ventricosum Miller. (S.)
Cyrtolites carinatus Miller. (S.)
Dactylophycus quadripartitum Miller and Dyer. (E.)
Dactylophycus tridigitatum Miller and Dyer. (E.)
Dalmanella emacerata (Hall). (F., E., S.)
Dalmanella emacerata brevicula (Foerste). (S.)
Dalmanella fultonensis Foerste. (F.)
Dalmanella multisecta (Meek). (E., S., M., I.)
Dekayella obscura Ulrich. (M.)
Dekayella ulrichi (Nicholson). (E., S., M.)
Dekayia maculata James. (M.)
Dendrocrinus navigiolum Miller. (F.)
Dermatostroma scabrum (James). (E., S., M.)
Dicranella? byrnesi (Miller). (F.)
Dictyonema arbusculum (Ulrich). (I., S.)
Discina sublamellosa Ulrich. (E.)
Ectenocrinus grandis (Meek). (E., S., M.)
Ectenocrinus simplex (Hall). (E., S., M.)
Elpe radiata (Ulrich). (F.)
Eotrophonia setigera Ulrich. (E.)
Escharopora acuminata (James). (E., S., M.)
Fusispira terebriformis Hall. (E.)
Glyptocrinus? pattersoni Miller. (E.)
Hallopora nodulosa (Nicholson). (M.)
Hallopora onealli (James). (E., I.)
Hallopora onealli communis (James). (E., S., M.)
Hallopora onealli sigillaroides (Nicholson). (E., S., M.)
Hemiphragma whitfieldi (James). (E., S.)
Heterocrinus exilis Hall. (E., S., M.)
Heterocrinus exilis exiguus (Meek).
Heterocrinus? geniculata Ulrich. (F.)
Heterocrinus heterodactylus Hall. (E., S., M.)
Heterocrinus heterodactylus propinquus Meek. (E. S., M.)
Homotrypa curvata praecipta Bassler. (S.)
Homotrypa glabra Cumings and Galloway. (M.)
Hormotoma gracilis (Hall).
Iocrinus subcrassus (Meek and Worthen).
Jonesella crepidiformis (Ulrich). (E., S.)
Jonesella pedigera Ulrich. (E.)
Lepidocoleus jamesi (Hall). (E., S., M., I.)
Lepidolites dickhauti Ulrich. (S.)
Leptæna gibbosa (James). (E.)
Leptæna gibbosa invenusta Foerste. (F. or E.)
Leptobolus insignis Hall. (F., Fr.)
Leptotrypa cortex Ulrich. (E.)
Lichenocrinus crateriformis Hall. (S., M.)
Lichenocrinus dubius Miller. (E.)
Lingula bisulcata Ulrich. (E.)
Liospira micula (Hall). (E., S., M.)
Lophospira bicincta (Hall).
Lophospira (?Seelya) lirata Ulrich. (E., S.)
Lophospira (?Seelya) lirata obsoleta Ulrich. (E., S.),
Lophospira tenuistriata Ulrich. (S.)
Lophospira tropidophora (Meek). (E., S., M.)
Lyrodesma cincinnatiense Hall. (E.)
Lyrodesma conradi Ulrich. (S.)
Mastigograptus gracillimus (Lesquereux). (E., S., M.)
Merocrinus curtus (Ulrich). (F.)
Mesopalæaster finei (Ulrich). (F.)
Mesopalæaster proavitus Schuchert. (E.)
Microceras inornatum (Hall). (E., S., M.)
Modiolopsis angustata Ulrich. (S.)
Modiolopsis parva Ulrich. (S.)
Modiolopsis simulatrix Ulrich. (S.)
Modiolopsis subtruncata Ulrich. (E.)
Monotrypa subglobosa (Ulrich). (E.)
Monotrypella æqualis Ulrich. (E.)
Nereidavus varians Grinnell. (E., S., M.)
Odontopleura crossota (Locke). (E., S., M., I.)
Orbiculoidea tenuistriata (Ulrich). (E., Fr.)

Ormathichnus moniliformis Miller. (E.)
Orthoceras ortoni Meek. (S.)
Orthoceras transversum Miller. (E., S., M.)
Orthodesma occidentale Miller. (S.)
Palæophycus flexuosum James.
Peronopora vera Ulrich. (E., S., M.)
Petalichnus multipartitus Miller. (E.)
Pholidops cincinnatiensis Hall. (E., S., M.)
Placentula inornata Ulrich. (E.)
Plectambonites centricarinatus Ruedemann. (I.)
Plectambonites plicatellus (Ulrich). (F., I.)
Plectambonites rugosus (Meek). (E., S., M.)
Primitia centralis Ulrich. (F., E., S., M.)
Primitia rudis Ulrich. (E.)
Primitiella claypolei (Ulrich). (F.)
Primitiella unicornis (Ulrich). (F.)
Primitiella whitfieldi (Jones). (F.)
Proboscina confusa (Nicholson). (E., S., M.)
Proetus spurlocki Meek. (E., S.)
Protoscolex covingtonensis Ulrich. (E.)
Protoscolex magnus Miller and Faber. (F.)
Protoscolex ornatus Ulrich. (E.)
Protoscolex simplex Ulrich. (E.)
Protoscolex tenuis Ulrich. (E.)
Protostigma sigillaroides Lesquereux. (M.)
Psiloconcha minima Ulrich. (S.)
Psiloconcha tenuistriata Ulrich. (E.)
Pterinea mucronata Ulrich. (E.)
Rafinesquina alternata (Conrad).
Rafinesquina squamula (James). (S., M.)
Rafinesquina ulrichi (James). (E., I.)
Rhinidictya parallela (James). (E.)
Rhombodictyon globosum James.
Rhytimya radiata Ulrich. (S.)
Rusophycus asperum Miller and Dyer. (E.)
Rusophycus carleyi (James).
Serpulites dissolutus Billings. (E., S., M.)
Scolithus dispar James. (E.)
Sinuites cancellatus (Hall). (E., S., M.)
Sinuites globularis (Miller and Faber).
Sinuites granistriatus (Ulrich). (S.)
Sinuites planodorsatus (Ulrich). (S.)
Sphenophyllum primaevum Lesquereux.
Stictoporella flexuosa (James). (E.)
Stigmatella clavis (Ulrich). (E., M.)
Stigmatella nana Ulrich and Bassler. (E.)
Streptaster reversata Foerste. (S.)
Stromatopora arachnoidea (Hall). (E., S., M.)
Strophomena hallie (Miller). (E.)
Strophomena millionensis Foerste.
Technophorus cincinnatiensis Miller and Faber. (E)
Technophorus yoldiaformis Ulrich. (E.)
Teratichnus confertus Miller. (E.)
Tetranota obsoleta Ulrich and Scofield.
Trachomatichnus cincinnatiensis Miller. (E.)
Trachomatichnus numerosus Miller. (E.)
Trachomatichnus permultus Miller. (E.)
Trematis millepunctata Hall. (E., S., M.)
Triarthrus becki Green. (F., Fr.)
Trichophycus sulcatum Miller and Dyer. (E.)
Trocholites minusculus Miller and Dyer. (S.)
Trochonema (*Eunema*) *nitidum* Ulrich. (S.)
Ulrichia nodosa (Ulrich). (F., E., S., M.)
Walcottia sulcata James. (E.)
Zygospira modesta Hall. (E., S.. M.)

CINCINNATIAN (MAYSVILLE) OF OHIO VALLEY, NEW YORK, AND CANADA.

(Mount Hope—H.; Fairmount—F.; Bellevue—B.; Corryville—C.; Mount Auburn—A.; Leipers—L.; Pulaski—P.)

Actinoceras crebriseptum (Hall). (P.)
Agelacrinites cincinnatiensis (Roemer). (F., B., C.)
Agelacrinites holbrooki (James). (C?)
Agelacrinites pileus (Hall). (C.)
Agelacrinites warrenensis (James). (F.)
Alepidaster flexuosus (Miller and Dyer).
Allonychia jamesi (Meek). (C.)
Allonychia ovata Ulrich. (F.)
Allonychia subrotunda Ulrich. (C.)
Amphilichas halli (Foerste). (C.)
Amplexopora ampla Ulrich and Bassler. (L., F.)
Amplexopora cingulata Ulrich. (F.)
Amplexopora columbiana Ulrich and Bassler. (L.)
Amplexopora? discoidea (Nicholson). (F.)
Amplexopora filiosa (D'Orbigny). (F., B., C.)
Amplexopora robusta Ulrich. (B.)
Amplexopora septosa Ulrich. (H., F.)
Anomalocrinus caponiformis (Lyon). (C)
Anomalocrinus incurvus (Meek and Worthen). (F.)
Anomalodonta plicata Ulrich. (C.)
Anomaloides reticulata Ulrich. (H.)
Aparchites minutissimus (Hall). (H., F., B., C., A., L.)
Arabellites aciculatus James. (F.)
Arabellites ascialis Hinde. (P.)
Arabellites cervicornis (Hinde). (P.)
Arabellites cornutus Hinde. (P.)
Arabellites crenulatus Hinde. (P.)
Arabellites cristatus Hinde. (P.)
Arabellites cuspidatus Hinde. (P.)
Arabellites gibbosus Hinde. (P.)
Arabellites hamatus Hinde. (P.)
Arabellites hindei James. (P.)
Arabellites lunatus Hinde. (P., H.)
Arabellites? obliquus Hinde. (P.)
Arabellites ovalis Hinde. (P.)
Arabellites pectinatus Hinde. (P.)
Arabellites quadratus Hinde. (P., H.)
Arabellites rectus Hinde. (P.)
Arabellites scutellatus Hinde. (P.)
Archinacella pulaskiensis Foerste. (P.)
Arthraria biclavata Miller. (H., F., B., C.A.,.)
Arthropora cincinnatiensis (James). (H.)
Arthropora shafferi (Meek).
Atactopora hirsuta Ulrich. (F.)
Atactopora maculata Ulrich. (F.)
Atactoporella multigranosa (Ulrich). (F., B., C.)
Atactoporella mundula (Ulrich). (F.)
Atactoporella ortoni (Nicholson). (B., C.)
Atactoporella tenella (Ulrich). (F.)
Ateleocystites balanoides (Meek). (C.)
Arthrostylus curtus (Ulrich). (H.)
Batostoma maysvillense Nickles. (H.)
Bellerophon capax Ulrich. (F.)
Bellerophon cincinnatiensis Miller and Faber.
Bellerophon gorbyi Miller.
Bellerophon recurvus Ulrich. (C.)
Bellerophon rugosus Emmons. (P.)
Berenicea primitiva Ulrich.

Bollia persulcata (Ulrich). (H., F., B., C., A.)
Brachiospongia lævis Foerste. (H.)
Bucanopsis carinifera Ulrich. (F.)
Buthotrephis subnodosa Hall. (P.)
Byssonychia acutirostris Ulrich. (F.)
Byssonychia alveolata Ulrich. (C.)
Byssonychia carinata (Goldfuss). (P.)
Byssonychia imbricata Ulrich. (C.)
Byssonychia præcursa Ulrich. (F., P.)
Byssonychia radiata (Hall). (H., F., B., C., A.)
Byssonychia retrorsa (Miller). (F.)
Byssonychia walkerensis Grabau. (Ba.)
Bythocypris cylindrica Hall. (H., F., B., C., A.)
Bythopora dendrina (James). (F., C.)
Bythopora gracilis (Nicholson). (F., B., C., A.)
Calymene meeki Foerste.
Ceramoporella distincta Ulrich. (H., F.)
Ceramoporella granulosa Ulrich. (F., B., C., A.)
Ceramoporella ohioensis (Nicholson). (F., B., C., A.)
Ceramoporella whitei (James). (F., B., C.)
Ceratocephala anchoralis (Miller).
Ceratocephala ceralepta Anthony.
Ceratopsis oculifera (Hall). (C.)
Ceraurus milleranus Miller and Gurley. (C.)
Chasmatopora clathrata (Miller and Dyer). (F.)
Chiloporella flabellata Ulrich. (C.)
Clathrospira conica Ulrich and Scofield. (F.)
Clidophorus fabula Hall. (H., F., B., C., A.)
Clidophorus planulatus (Conrad). (P.)
Clidophorus prævolutus Foerste. (P.)
Cœloclema oweni (James). (A.)
Colpomya faba pusilla Foerste. (P.)
Constellaria florida Ulrich. (F.)
Constellaria florida prominens Ulrich. (F.)
Constellaria plana Ulrich. (F.)
Conularia formosa Miller and Dyer.
Conularia hudsoni Emmons. (P.)
Cornulites conicus (Nicholson).
Cornulites corrugatus (Nicholson).
Cornulites flexuosus Hall.
Cornulites minor (Nicholson).
Corynotrypa delicatula (James). (H., F., B., C., A.)
Corynotrypa inflata (Hall). (B., C., A.)
Crania lælia Hall. (H., F., B., C., A.)
Crania scabiosa Hall. (H., F., B., C., A.)
Crepipora impressa Ulrich. (F.)
Crepipora simulans Ulrich. (F.)
Cryptolithus tessellatus (Greene).
Ctenobolbina duryi (Miller). (C., A.)
Ctenodonta lorrainensis Foerste. (P.)
Ctenodonta obliqua (Hall). (H., F., B., C., A.)
Ctenodonta pectenculoides (Hall). (H., F.)
Ctenodonta perminuta Ulrich. (A., F., B., C.)
Cuneamya coriformis Miller. (C.)
Cuneamya elliptica Miller. (C.)
Cuneamya scapha brevior Foerste. (P.)
Cyclocystoides bellulus Miller and Dyer. (F.)
Cyclocystoides cincinnatiensis Miller and Faber. (C.)
Cyclocystoides magnus Miller and Dyer.
Cyclocystoides nitidus Faber. (C.)
Cyclonema gracile Ulrich. (H.)
Cyclonema gracile striatulum Ulrich. (H.)
Cyclonema humerosum Ulrich. (B., C., A.)
Cyclonema inflatum Ulrich. (F.)
Cyclonema (*? Holopea*) *limatum* Ulrich. (F.)
Cyclonema mediale Ulrich. (F.)
Cyclonema pyramidatum James. (F.)
Cyclonema simulans Ulrich. (C.)
Cyclonema sublæve Ulrich. (H.)
Cyclonema transversum Ulrich. F.
Cyclora depressa Ulrich. (H., F., B., C., A.)
Cyclora hoffmanni Miller. (H., F., B., C., A.)
Cyclora minuta Hall. (H., F., B., C., A.)
Cyclora parvula (Hall). (H., F., B., C., A.)
Cylindrocœlia covingtonensis Ulrich. (F.)
Cymatonota lenior Foerste. (P.)
Cymatonota parallela (Hall). (P.)
Cymatonota pholadis (Conrad). (F., P.)
Cymatonota recta Ulrich. (B., C.)
Cyphotrypa semipilaris (Ulrich). (F.)
Cyrtoceras conoidale Wetherby. (F. L.)
Cyrtoceras vallandinghami Miller. (F., L.)
Cyrtolites ornatus Conrad. (H., F., B., C., A., P.)
Dalmanella centrilineata (Hall). (P.)
Dalmanella fairmountensis Foerste. (B.)
Dekayia appressa Ulrich. (C.)
Dekayia aspera Milne-Edwards and Haime. (F.)
Dekayia magna Cumings. (B.)
Dekayia multispinosa Ulrich. (C.)
Dekayia pelliculata Ulrich. (F.)
Dendrocrinus cincinnatiensis (Meek). (F.)
Dermatostroma papillatum (James). (H., F., B., C., A.)
Dermatostroma papillatum diversum Parks. (C.)
Dermatostroma scabrum (James). (H., F., B., C., A.)
Dicranopora emacerata (Nicholson). (H., F.)
Dicranopora internodia (Miller and Dyer). (F.)
Dicranopora meeki (James). (H.)
Diplograptus hudsonicus Nicholson. (P.)
Discotrypa elegans (Ulrich). (F.)
Distacodus incurvus (Pander). (P.)
Drepanodus arcuatus Pander. (P.)
Dyeria costata (James). (C.)
Dystactophycus mamillanum Miller and Dyer. (C.)
Dystactospongia insolens Miller. (F.)
Ectenocrinus grandis (Meek). (H., F.)
Ectenocrinus simplex (Hall). (F.)
Elpe cincinnatiensis (Meek). (C.)
Elpe irregularis (Miller). (C.)
Endoceras arcuatum (J. F. James).
Eridonychia apicalis Ulrich. (F.)
Eridonychia paucicostata Ulrich. (F.)
Escharopora falciformis (Nicholson). (H., F., L.)
Escharopora hilli (James).
Escharopora maculata (Ulrich). (F.)
Escharopora pavonia (D'Orbigny). (F., L.)
Eunicites contortus Hinde. (P.)
Eunicites? digitatus Hinde. (P.)
Eunicites gracilis Hinde. (P.)
Eunicites major Hinde. (P.)
Eunicites perdentatus Hinde. (P.)
Eunicites simplex Hinde. (P., H.)
Eurymya alata (Ulrich). (F.)
Faberia anomala Miller.
Glycerites sulcatus Hinde. (P.)
Glycerites sulcatus excavatus Hinde. (P.)
Glyptocrinus decadactylus Hall. (F.)
Glyptocrinus dyeri Meek. (C.)
Glyptocrinus dyeri sublævis Miller. (C.)
Glyptocrinus subglobosus (Meek). (C.)

Gomphoceras cincinnatiense Miller. (C.)
Gomphoceras faberi Miller. (C.)
Hallopora andrewsi (Nicholson). (B., C.)
Hallopora dalei (Milne-Edwards and Haime). (H., F., L.)
Hallopora ramosa (D'Orbigny). (B., C., A.)
Hallopora rugosa (Milne-Edwards and Haime). (B., C., A.)
Hallopora subplana (Ulrich). (H., F.)
Hebertella (*Glyptorthis*) *crispata* (Emmons). (P.)
Hebertella occidentalis Hall.
Hebertella occidentalis sinuata Hall.
Heliophycus stelliforme Miller and Dyer. (F.)
Hemicystites (*Cystaster*) *granulatus* Hall. (F.)
Hemicystites stellatus Hall. (F.)
Heterocrinus juvenis Hall. (C.)
Heterocrinus pentagonus Ulrich. (C.)
Heteronema? contextum Ulrich and Bassler. (C.)
Heterotrypa frondosa D'Orbigny. (M.)
Heterotrypa inflecta Ulrich. (C.)
Heterotrypa lobata (Cumings). (F.)
Heterotrypa paupera (Ulrich). (C.)
Heterotrypa solitaria Ulrich. (F.)
Heterotrypa subfrondosa (Cumings). (F.)
Heterotrypa subpulchella (Nicholson). (F.)
Hindia gregaria (Miller and Dyer).
Homotrypa alta Cumings and Galloway. (H., F.)
Homotrypa cincinnatiensis Bassler. (F.)
Homotrypa curvata Ulrich. (F.)
Homotrypa dumosa Bassler. (F.)
Homotrypa flabellaris spinifera Bassler. (F.)
Homotrypa grandis Bassler. (L.)
Homotrypa obliqua Ulrich. (F., B., C.)
Homotrypa pulchra Bassler. (A.)
Homotrypa spinea Cumings and Galloway. (H. F.)
Homotrypella dubia (Cumings and Galloway). (B.)
Homotrypella nodosa Ulrich and Bassler. (L.)
Hudsonaster incomptus Meek. (C.)
Iocrinus subcrassus (Meek and Worthen).
Ischadites circularis (Emmons).
Ischyrodonta unionoides (Meek). (B.)
Isotelus gigas Dekay.
Isotelus maximus Locke.
Lepidocoleus jamesi (Hall and Whitfield). (H., F., B., C., A., L., P.)
Leptopoterion mammiferum Ulrich. (C.)
Leptotrypa calceola (Miller and Dyer). (C.)
Leptotrypa clavacoidea (James). (C.)
Leptotrypa minima Ulrich. (B.)
Leptotrypa ornata Ulrich. (C.)
Lichenocrinus dyeri Hall. (C.)
Licrophycus flabellum Miller and Dyer. (C.)
Lingula cincinnatiensis Hall and Whitfield. (F.)
Lophospira abbreviata (Hall). (P.)
Lophospira bicincta (Hall).
Lophospira bowdeni (Safford).
Lophospira tropidophora (Meek).
Lumbriconereites dactylodus Hinde. (H.)
Lyrodesma grande Ulrich. (B.)
Lyrodesma inornatum Ulrich. (F.)
Lyrodesma major (Ulrich). (C.)
Lyrodesma planum Conrad. (P.)
Lyrodesma poststriatum (Emmons). (P.)
Mastigograptus gracillimus (Lesquereux). (F.)
Mesopalæaster intermedius Schuchert.
Mesopalæaster shafferi (Hall). (F.)
Microceras inornatum Hall. (H., F., B., C., A.)
Microceras minutissimum Ulrich. (F.)
Modiolodon obtusus Ulrich. (B.)
Modiolodon postriatus Foerste. (P.)
Modiolodon truncatus (Hall). (F., B., C., P.)
Modiolopsis faberi Miller. (F.)
Modiolopsis longa Miller and Faber. (F.)
Modiolopsis? (*Colpomya?*) *milleri* Ulrich. (F.)
Modiolopsis modiolaris (Conrad). (F., P.)
Modiolopsis postplicata Foerste. (P.)
Modiolopsis sinuata (Emmons). (P.)
Modiolopsis subparallela Ulrich. (F.)
Modiolopsis? terminalis Hall.
Monticulipora cincinnatiensis (James). (C.)
Monticulipora mammulata (D'Orbigny). (F.)
Monticulipora molesta Nicholson. (B., L.)
Nereidavus varians Grinnell.
Nicholsonella vaupeli (Ulrich). (B.)
Oenonites? carinatus Hinde. (P.)
Oenonites cuneatus Hinde. (P.)
Oenonites curvidens Hinde. (P.)
Oenonites inæqualis Hinde. (P.)
Oenonites rostratus Hinde. (P.)
Oenonites serratus Hinde. (P.)
Ohiocrinus compactus (Meek). (C.)
Ohiocrinus constrictus (Hall). (C.)
Ohiocrinus laxus (Hall) (F.)
Opisthoptera ampla Ulrich. (F.)
Opisthoptera notabilis Ulrich. (F.)
Orthis(?) pumila Ulrich. (C.)
Orthoceras byrnesi Miller. (F.)
Orthoceras cincinnatiense Miller. (F.)
Orthoceras dyeri Miller. (C.)
Orthoceras harperi Miller. (C.)
Orthoceras lamellosum Hall. (P.)
Orthoceras meeki Miller. (F.)
Orthoceras turbidum Hall and Whitfield. (F.)
Orthodesma approximatum Foerste. (P.)
Orthodesma contractum (Hall).
Orthodesma nasutum (Conrad). (P.)
Orthodesma parvum Ulrich. (C.)
Orthodesma prolatum Foerste. (P.)
Orthodesma pulaskiense Foerste. (P.)
Orthonotella faberi Miller. (F.)
Orthorhynchula linneyi (James). (L., F.)
Pasceolus claudei Miller. (B.)
Pasceolus darwini Miller. (B.)
Pattersonia difficilis Miller. (C.)
Pattersonia tuberosa (Beecher). (B.)
Pattersonia ulrichi Rauff. (C.)
Peronopora compressa (Ulrich). (B., C., A.)
Peronopora decipiens (Rominger). (B., C., A.)
Peronopora vera Ulrich. (H., F.)
Petigopora asperula Ulrich. (B.)
Petigopora gregaria Ulrich. (F., B., C.)
Petigopora petechialis (Nicholson). (F., B., C., A.)
Petraster? americanus (D'Orbigny). (F.)
Pholidops cincinnatiensis Hall. (H., F.)
Pholidops subtruncata Hall. (P.)
Phragmolites bellulus (Ulrich). (F.)
Phragmolites elegans (Miller). (C.)
Physetomya acuminata Ulrich. (F.)
Pianodema bellula (Meek). (F.)
Placentula marginata Ulrich. (C.)
Platystrophia acuminata (James). (A.)
Platystrophia crassa (James). (F., B., C.)
Platystrophia cypha (James). (B.)

Platystrophia laticosta (Meek). (F., B., C.)
Platystrophia morrowensis (James). (C.)
Platystrophia pauciplicata (Cumings). (F.)
Platystrophia ponderosa Foerste. (M., B., C., A.)
Platystrophia ponderosa auburnensis Foerste. (A.)
Platystrophia ponderosa stevensoni Grabau. (Ba.)
Platystrophia profundosulcata (Meek). (F., H.)
Platystrophia unicostata Cumings. (B.)
Plectorthis æquivalvis (Hall). (F.)
Plectorthis æquivalvis latior Foerste. (F.)
Plectorthis æquivalvis pervagata Foerste. (F.)
Plectorthis (*Encuclodema*) *crassiplicata* (Foerste). (F.)
Plectorthis fissicosta (Hall). (F.)
Plectorthis fissicosta triplicatella (Meek). (F.)
Plectorthis jamesi (Hall). (C.)
Plectorthis neglecta (James). (H.)
Plectorthis plicatella (Hall). (F.)
Plectorthis (*Encuclodema*) *sectostriata* (Ulrich). (F.)
Plectorthis sordida (Hall). (F.)
Plectorthis sordida multiplicata Foerste. (F.)
Polygnathus wilsoni James. (C.)
Primitia centralis Ulrich.
Prioniodus dychei James. (C.)
Prioniodus elegans Pander. (P.)
Prioniodus furcatus Hinde. (P.)
Prioniodus? politus Hinde. (P.)
Proboscina auloporoides (Nicholson). (B., C., A.)
Proboscina frondosa (Nicholson). (B., C., A.)
Proetus parviusculus Hall. (C.)
Promopalæaster dyeri (Meek). (F.)
Promopalæaster speciosus (Meek).
Protowarthia cancellata Hall. (H., F., B., C.)
Psiloconcha inornata Ulrich. (B., P.)
Psiloconcha sinuata Ulrich. (B.)
Psiloconcha sinuata borealis Foerste. (P.)
Psiloconcha subovalis (Ulrich). (B., P.)
Psilonychia perangulata Ulrich. (C.)
Pterinea cincinnatiensis Miller and Faber. (F.)
Pterinea (*Caritodens*) *demissa* (Conrad). (P., H., F., B., C., A.)
Pterinea insueta (Emmons).
Pterinea rugatula Miller and Faber. (F.)
Pterotheca pentagona Foerste. (P.)
Pterygometopus carleyi (Meek). (F.)
Pterygometopus microps (Green).
Ptychocrinus parvus Hall. (F.)
Pyanomya faberi Miller. (F.)
Pyanomya gibbosa Miller. (F.)
Pycnocrinus germanus (Miller). (C.)
Pycnocrinus shafferi (Miller). (C.)
Pyrenomœus decipiens Ulrich. (C.)
Rafinesquina alternata (Conrad). (H., F., B., C., A.)
Rafinesquina alternata alternistriata (Hall).
Rafinesquina alternata fracta (Meek). (F., B., C.)
Rafinesquina alternata ponderosa Ulrich. (B.)
Rafinesquina mucronata Foerste. (P.)
Rafinesquina nasuta (Conrad). (P., C.)
Rafinesquina squamula (James). (F.)
Raphistoma halli (Miller). (F.)
Rhytimya compressa Ulrich. (F.)
Rhytimya convexa Ulrich. (F., C?)
Rhytimya mickleboroughi (Whitfield). (F., C?)
Rhytimya munda (Miller and Faber). (C.)
Rhytimya œhana Ulrich. (P., F.)
Rhytimya producta Ulrich. (F.)
Rhytimya scaphula (Miller and Faber). (F.)
Rusophycus bilobatus Vanuxem.
Rusophycus pudicum Hall.
Schizambon? lockei Winchell and Schuchert. (F.)
Schizocrania filosa Hall. (F., B., C.)
Schizolopha moorei Ulrich. (H., F., B., C., A., L., P.)
Scolithus tuberosus Miller and Dyer. (H.)
Sedgwickia? compressa Meek. (F.)
Seelya mundula Ulrich. (F.)
Serpulites dissolutus Billings. (H., F., B., C., A., L., P.)
Spatiopora aspera Ulrich. (B.)
Spatiopora lineata Ulrich. (B.)
Spatiopora maculosa Ulrich. (C.)
Spatiopora tuberculata (Milne-Edwards and Haime) (F., C.)
Sphenolium faberi Miller.
Sphenophyllum primævum Lesquereux.
Spirorbis cincinnatiensis Miller and Dyer.
Spirorbis? lovelandensis James.
Stigmatella alcicornis Cumings and Galloway (F.)
Stigmatella dychei (James). (A.)
Stigmatella irregularis (Ulrich). (B.)
Stigmatella nicklesi Ulrich and Bassler. (F.)
Stigmatella sessilis Cumings and Galloway. (F.)
Stomatopora arachnoidea (Hall). (H., F., B., C., A., L., P.)
Streptaster vorticellatus (Hall). (F., C.)
Stromatocerium huronense australe Parks. (L.)
Strophomena maysvillensis Foerste. (F., H.)
Strophomena planoconvexa Hall. (F.)
Strophomena sinuata James. (F.)
Technophorus faberi Miller. (F.)
Technophorus punctostriatus Ulrich. (F.)
Technophorus punctostriatus quincuncialis Foerste. (P.)
Tetradium fibratum Safford. (L.)
Trematis crassipuncta Ulrich. (F.)
Trematis(?) dyeri Miller. (F.)
Trematis millepunctata Hall. (H., F., B., C., A.)
Trematis oblata Ulrich. (F.)
Trematis umbonata Ulrich. (C.)
Trichophycus lanosum Miller and Dyer. (C.)
Trichophycus silurianum (James). (C.)
Trichophycus venosum Miller. (F.)
Trocholites circularis Miller and Dyer.
Trocholites dyeri Hyatt.
Trocholites planorbiformis Conrad. (P.)
Ulrichia nodosa (Ulrich). (H., F., B., C., A.)
Vinella radialis Ulrich. (C.)
Walcottia? cookana Miller and Dyer. (C.)
Walcottia rugosa Miller and Dyer. (F.)
Whiteavesia chambliensis (Foerste). (P.)
Whiteavesia corrugata (Miller and Faber). (C.)
Whiteavesia pholadiformis (Hall). (P.)
Whiteavesia pholadiformis divaricata (Foerste). (P.)
Whitella complanata Foerste. (P.)
Whitella goniumbonata Foerste. (P.)
Whitella hindi Foerste. (P.)
Whitella securiformis Foerste. (P.)
Zygospira cincinnatiensis Meek. (H., F.)
Zygospira? erratica (Hall). (P.)
Zygospira modesta Hall. (H., F., B., C., A.)

ORDOVICIAN OF SOUTH AMERICA.

Agnostus bolivianus Hoek.
Arca?? gracilis Hoek.
Arethusina argentina Kayser.
Bathyurus?? darwini Kayser.
Bathyurus? lajensis Kayser.
Bathyurus? orbignyanus Kayser.
Bistramia elegans Hoek.
Boliviana bipennis Salter.
Boliviana melocactus Salter.
Boliviana proboscidea Salter.
Calymene callicephala Green.
Calymene diops Green.
Cruziana cucurbita Salter.
Cruziana furcifera D'Orbigny.
Cruziana unduavi Salter.
Cryptolithus boliviensis Lake.
Cryptolithus kruegeri (Hoek).
Dictyonema murrayi tarijense Hoek.
Hemigyraspis liquensis (Hoek).
Homalonotus? bistrami Hoek.
Illænus argentinus (Kayser).
Leptæna(?) stelzneri Kayser.
Lingula boliviana Hoek.
Lingula ellipsiformis Hoek.
Lingula inornata Hoek.
Lingula lineata Hoek.
Maclurites avellanedæ (Kayser).
Maclurites sarmienti (Kayser).
Megalaspsis? americana Hoek.
Megalaspsis brackenbuschi Kayser.
Megalaspsis? matacensis Hoek.
Monticulipora? argentina Kayser.
Orthis calligramma Kayser.
Orthis disparilis (Kayser).
Orthis? saltensis Kayser.
Orthis vespertilio Sowerby.
Orthoceras bolivianum Hoek.
Parabolinella andina Hoek.
Parabolinopsis mariana Hoek.
Pizarroa quichuana Hoek.
Pterygometopus saltensis Kayser.
Strophomena(?) talacastensis Kayser.
Thysanopyge argentina Kayser.
Tunarria cochambambina Hoek.

ORDOVICIAN (MISCELLANEOUS).

(Exact horizon unknown.)

Asaphus? astragolotes Green.
Bellerophon allegoricus White. (Utah.)
Dinorthis fontalis (White). (Utah.)
Girvanella antiqua Dawson. (Quebec.)
Isotelus cyclops Green. (N. Y.)
Labyrinthites chidlensis Lambe. (Arctic America.)
Myrianites murchisoni Emmons. (Me.)
Myrianites sillimani Emmons. (Me.)
Nemapodia tenuissima Emmons. (N. Y.)
Nereites deweyi Emmons. (Me.)
Nereites gracilis Emmons. (Me.)
Nereites jacksoni Emmons. (Me.)
Nereites lanceolatus Emmons. (Me.)
Nereites loomisi Emmons. (Me.)
Nereites pugnus Emmons. (Me.)
Nereites robustus (Emmons). (N. Y.)
Nidulites favus Salter. (Quebec City.)
Oldhamia (*Murchisonites*) *occidens* (Walcott). (N.Y.)
Orthoceras goldfussi (Troost). (Tenn.)
Primitia mundula effussa Jones. (Quebec City.)
Receptaculites arcticus Etheridge. (Arctic America.)

SILURIAN FAUNAS.

RICHMOND OF AREAS ADJACENT TO CINCINNATI AXIS.

(Arnheim=A.; Waynesville=W.; Liberty=L.;
Whitewater=Wh.; Elkhorn=E.)

Agelacrinites austini (Foerste). (W.)
Agelacrinites faberi (Miller). (W.)
Alepidaster granuliferus (Meek). (R.)
Alepidaster miamiensis (Miller). (W. or L.)
Amplexopora granulosa Cumings and Galloway. (L.)
Amplexopora pumila Cumings and Galloway. (L.)
Amplexopora pustulosa Ulrich. (W.)
Anomalodonta alata (Meek). (A., W.)
Anomalodonta casei (Meek and Worthen). (Wh.)
Anomalodonta costata (Meek). (A., W.)
Anomalodonta gigantea Miller. (W.)
Anoptera miseneri Ulrich. (W.)
Anorthaster miamiensis Schuchert. (W. or L.)
Aparchites minutissimus (Hall). (A., W., L., Wh., E.)
Aparchites oblongus Ulrich. (A.)
Arabellites procursus Foerste. (E.)
Archinacella indianensis (Miller). (Wh?)
Archinacella richmondensis Ulrich. (Wh.)
Archinacella rugatina Ulrich. (A.)
Arctinurus harrisi (Miller). (L.)
Arthraria biclavata Miller. (A., W., L., Wh., E.)
Atactopora angularis Ulrich and Bassler. (W.)
Atactoporella schucherti Ulrich. (W., Wh.)
Batostoma prosseri Cumings and Galloway. (W., L.)
Batostoma variable (Ulrich). (W., E.)
Batostoma varians (James). (A.)
Beatricea nodulifera Foerste. (L.)
Beatricea nodulifera intermedia Foerste. (L.)
Beatricea nodulosa Billings.
Beatricea undulata Billings.
Beatricea undulata cylindrica Foerste. (L., E.)
Bellerophon mohri Miller. (Wh.)
Bellerophon subangularis Ulrich. (Wh.)
Berenicea primitiva Ulrich. (A., W.)
Beyrichia parallela (Ulrich). (Wh.)
Beyrichia tumida (Ulrich). (A. or W.)
Bodmania insuetum Miller and Faber. (Wh.)
Bollia persulcata (Ulrich). (A., W., L., Wh., E.)
Bollia pumila Ulrich. (W.)
Bollia regularis (Emmons). (A.)
Brachiospongia tuberculata James. (L.)
Bucania crassa Ulrich. (E.)
Bucania simulatrix Ulrich. (W.)
Buthotrephis gracilis Hall. (A., W., L., Wh., E.)
Buthotrephis gracilis crassa Hall. (A., W., L., Wh., E.)
Byssonychia cultrata Ulrich. (W.)
Byssonychia grandis Ulrich. (W.)
Byssonychia obesa Ulrich. (Wh.)
Byssonychia radiata (Hall).
Byssonychia richmondensis Ulrich. (Wh.)
Byssonychia robusta (Miller). (Wh.)
Byssonychia subrecta Ulrich. (W.)
Byssonychia tenuistriata Ulrich. (Wh.)
Bythocypris cylindrica (Hall). (A., W., L., Wh., E.)

Bythopora delicatula (Nicholson). (W., L.)
Bythopora meeki (James). (W.)
Bythopora striata Ulrich. (A., W.)
Calapœcia cribriformis (Nicholson). (W., L., Wh., E.)
Calloporella circularis (James). (W.)
Calymene meeki Foerste. (A., W., L., Wh., E.)
Calymene meeki retrorsa Foerste. (W.)
Cameroceras inæquabile (Miller). (W.)
Catazyga headi schuchertana (Ulrich). (W.)
Ceramoporella granulosa Ulrich. (A.)
Ceramoporella ohioensis (Nicholson). (A., W., L., Wh., E.)
Ceramoporella whitei James. (A.)
Ceratopsis robusta (Ulrich). (W., L., Wh., E.)
Ceraurinus icarus (Billings).
Ceraurus miseneri Foerste. (Wh.)
Chasmops breviceps (Hall). (W., L.)
Clidophorus faberi Miller.
Clidophorus fabula (Hall).
Clionychia excavata Ulrich. (Wh.)
Coleolus iowensis James. (A., W., L., Wh., E.)
Columnaria alveolata Goldfuss. (W., L., Wh., E.)
Columnaria calicina Nicholson.
Columnaria vacua Foerste. (W., L., Wh., E.)
Compsocrinus harrisi (Miller). (L.)
Compsocrinus miamiensis (Miller). (L.)
Conocardium richmondensis Foerste. (E.)
Constellaria limitaris (Ulrich). (W., Wh.)
Constellaria polystomella Niclolson. (W., Wh., E.)
Conularia formosa Miller und Dyer. (W., Wh.)
Corallidomus concentricus Whitfield. (L.)
Cornulites richmondensis (Miller). (Wh.)
Corynotrypa delicatula (James). (A., W., L., Wh., E.)
Corynotrypa inflata (Hall). (A., W., L., W., E.)
Crania lælia Hall. (A., W., L., Wh., E.)
Crania scabiosa Hall. (A., W., L., Wh., E.)
Ctenobolbina hammelli (Miller and Faber). (W.)
Ctenodonta albertina Ulrich. (W.)
Ctenodonta cingulata (Ulrich). (A.)
Ctenodonta? hilli (Miller). (Wh.)
Ctenodonta madisonensis Ulrich. (A.)
Ctenodonta recurva (Ulrich.)
Ctenodonta similis (Ulrich). (W.)
Cuneamya curta Whitfield. (W.)
Cuneamya miamiensis Hall and Whitfield. (W.)
Cuneamya neglecta (Meek). (W.)
Cuneamya scapha Hall and Whitfield. (W.)
Cupulocrinus polydactylus (Shumard). (W., L., Wh.)
Cycloconcha milleri (Meek). (W.)
Cyclocystoides magnus Miller and Dyer. (W.)
Cyclocystoides minus Miller and Dyer. (W.)
Cyclocystoides mundulus Miller and Dyer. (W.)
Cyclocystoides parvus Miller and Dyer. (W.)
Cyclonema bilix (Conrad). (A., Wh.)
Cyclonema bilix fluctuatum (James). (A., W.)
Cyclora depressa Ulrich. (A., W., L., Wh., E.)
Cyclora hoffmani Miller. (A., W., L., Wh., E.)
Cyclora minuta Hall. (A., W., L., Wh , E)
Cyclora parvula (Hall). (A., W., L., Wh., E.)
Cyclora pulcella Miller. (A., W.)
Cymatonota attenuata Ulrich. (W.)
Cymatonota constricta Ulrich. (W., A.)
Cymatonota cylindrica (Miller and Faber). (W., A.)
Cymatonota semistriata Ulrich. (W.)
Cymatonota typicalis Ulrich. (W.)
Cyphotrypa stidhami (Ulrich). (Wh. or E.)
Cyphotrypa wilmingtonensis Ulrich and Bassler. (F.)
Cyrtoceras amœnum Miller. (Wh.)
Cyrtoceras faberi J. F. James. (W.)
Cyrtoceras hitzi Foerste. (Wh., S.)
Cyrtoceras irregulare Wetherby. (W.)
Cyrtoceras tenuiseptum Faber. (W.)
Crytoceras thompsoni Miller.
Cyrtocerina madisonensis Miller. (Wh., S.)
Cyrtodonta cuneata (Miller). (Wh.)
Cyrtodonta halli (Nettelroth).
Cyrtolites ornatus Conrad. (W.)
Dalmanella meeki (Miller). (A., W., L., Wh., E.)
Dawsonoceras hammelli (Foerste). (Wh., S,. E.)
Dendrocrinus caduceus (Hall). (W., L.)
Dendrocrinus casei Meek. (Wh.)
Dendrocrinus erraticus Miller. (W.)
Dendrocrinus posticus (Hall). (W., L.)
Dermatostroma canaliculatum Parks. (W.)
Dermatostroma corrugatum (Foerste). (Wh).
Dermatostroma glyptum (Foerste). (Wh.)
Dermatostroma papillatum (James). (W., L., Wh., E.)
Dermatostroma scabrum (James).
Dicranopora emacerata (Nicholson).
Dinorthis carleyi (Hall). (A.)
Dinorthis carleyi insolens Foerste. (W.)
Dinorthis subquadrata (Hall). (Wh.)
Drepanella richardsoni (Miller). (Wh.)
Dystactospongia madisonensis Foerste. (Wh., S.)
Dystactospongia minima Ulrich. (W.)
Entomis madisonensis Ulrich. (Wh., S.)
Eridonychia crenata Ulrich. (W.)
Eridotrypa simulatrix (Ulrich). (W.)
Eunicites confinis Foerste. (E.)
Eunicites falcatus Foerste. (E.)
Eunicites paululus Foerste. (E.)
Eurychilina? striatomarginata (Miller). (Wh., S.)
Faberia anomala Miller.
Fenestella granulosa Whitfield. (W., Wh.)
Girvanella richmondensis (Miller). (Wh.)
Glyptocrinus? fornshelli Miller. (W.)
Glyptocrinus? richardsoni Wetherby.
Gomphoceras eos Hall and Whitfield. (Wh?)
Gomphoceras indianense Miller and Faber. (W.)
Graptodictya perelegans (Ulrich). (W., L.)
Gyroceras baeri (Meek and Worthen). (L.)
Hallopora frondosa (Cumings). (Wh.)
Hallopora subnodosa (Ulrich). (W.)
Hebertella alveata Foerste. (L., Wh.)
Hebertella alveata richmondensis Foerste. (Wh.)
Hebertella (Glyptorthis) insculpta (Hall). (W.)
Hebertella occidentalis Hall. (A., W., L., Wh., E.)
Hebertella occidentalis sinuata Hall.
Helcionopsis striata Ulrich. (Wh.)
Helicotoma marginata Ulrich. (Wh.)
Helopora elegans Ulrich. (Wh.)
Helopora harrisi James. (W., L.)
Heterospongia aspera Ulrich. (A.)
Heterospongia knotti Ulrich. (A.)
Heterospongia subramosa Ulrich. (A.)
Heterotrypa microstigma Cumings and Galloway. (W.)
Heterotrypa subramosa (Ulrich). (W.)
Heterotrypa subramosa prolifica Ulrich. (W.)
Holopea hubbardi Miller. (Wh., S.)
Holopea oxfordensis Ulrich. (W.)

Homotrypa austini Bassler. (Wh.)
Homotrypa bassleri Nickles. (A.)
Homotrypa communis Bassler. (W.)
Homotrypa cylindrica Bassler. (Wh.)
Homotrypa dawsoni (Nicholson). (W.)
Homotrypa flabellaris Ulrich. (A., W., L., Wh., E.)
Homotrypa flabellaris frondosa Bassler. (A.)
Homotrypa flabellaris spinifera Bassler. (Wh.)
Homotrypa libana Bassler. (A.)
Homotrypa nicklesi Bassler.
Homotrypa nodulosa Bassler. (Wh.)
Homotrypa ramulosa Bassler. (Wh.)
Homotrypa richmondensis Bassler. (Wh.)
Homotrypa wortheni (James). (Wh.)
Homotrypa wortheni intercellata Bassler. (Wh.)
Homotrypa wortheni prominens Bassler. (E.)
Homotrypella dubia (Cumings and Galloway). (A.)
Homotrypella hospitalis (Nicholson). (W., L., Wh., E.)
Hudsonaster incomptus Meek.
Hyolithes(?) dubius Miller and Faber.
Hyolithes parviusculus Hall.
Hyolithes versaillesensis Miller and Faber.
Iocrinus subcrassus Meek and Worthen. (W.)
Ischyrodonta decipiens Ulrich. (E.)
Ischyrodonta elongata Ulrich. (Wh.)
Ischyrodonta miseneri Ulrich. (Wh.)
Ischyrodonta modioliformis Ulrich. (Wh.)
Ischyrodonta ovalis Ulrich. (Wh.)
Ischyrodonta truncata Ulrich. (Wh.)
Isotelus gigas Dekay.
Isotelus megistos Locke.
Jonesella digitata Ulrich. (A.)
Labechia subcylindrica (James). W.)
Lepadocystis moorei (Meek). (Wh.)
Leperditella glabra (Ulrich). (Wh.)
Leperditia cæcigena Miller. (Wh., S.)
Leptæna richmondensis Foerste.
Leptæna richmondensis precursor Foerste. (A.)
Lichenocrinus affinis Miller. (W.)
Lichenocrinus tuberculatus Miller. (Wh.)
Lingula vanhorni Miller. (W.)
Lioclemella subfusiformis (James). (W.)
Liospira rugata Ulrich. (A.)
Lophospira acuminata Ulrich. (Wh.)
Lophospira ampla Ulrich. (Wh?)
Lophospira bicincta (Hall).
Lophospira bowdeni Safford. (A., W., L., Wh., E.)
Lophospira hammelli (Miller). (Wh., S.)
Lophospira perlamellosa Ulrich. (W.)
Lophospira pulchella Ulrich and Scofield.
Lophospira tropidophora (Meek). (A., W., L., Wh., E.)
Lumbriconereites austini Foerste. (E.)
Lyrodesma major (Ulrich). (W.)
Megalograptus welchi Miller. (L.)
Mesopalæaster shafferi (Hall). (W.)
Mesopalæaster wilberanus (Meek and Worthen).
Mesotrypa orbiculata Cumings and Galloway. (A.)
Mesotrypa patella (Ulrich). (Wh.)
Microceras inornatum Hall. (A., W., L., Wh., E.)
Modiolodon declivis Ulrich. (Wh.)
Modiolodon subovalis Ulrich. (A., W.)
Modiolodon subrectus Ulrich. (Wh.)
Modiolopsis capax Miller.
Modiolopsis concentrica Hall and Whitfield. (W.)
Modiolopsis valida Ulrich. (W.)
Modiolopsis versaillesensis Miller. (W.)
Monticulipora cleavelandi James. (Wh.)
Monticulipora epidermata Ulrich and Scofield. (Wh.)
Monticulipora lævis Ulrich. (Wh.)
Monticulipora lævis consimilis Ulrich. (Wh.)
Monticulipora parasitica Ulrich. (Wh.)
Nereidavus varians Grinnell. (A., W., L., Wh.)
Nicholsonella peculiaris Cumings and Galloway. (A.)
Odontopleura onealli (Miller). (W.)
Œnonites decipiens Foerste. (E.)
Opisthoptera alternata Ulrich. (W.)
Opisthoptera casei (Meek and Worthen). (Wh.)
Opisthoptera concordensis Foerste. (A.)
Opisthoptera extenuata Ulrich. (W.)
Opisthoptera fissicosta (Meek). (W.)
Opisthoptera laticostata Ulrich. (W.)
Opisthoptera obliqua Ulrich. (Wh.)
Orthoceras carleyi Hall and Whitfield. (?W.)
Orthoceras duseri Hall and Whitfield. (W.)
Orthoceras gorbyi Miller.
Orthoceras hallanum Miller. (W.)
Orthoceras (*Ormoceras?*) *hitzi* Foerste. (Wh., S.)
Orthoceras mohri Miller. (A.)
Orthodesma canaliculatum Ulrich.
Orthodesma curvatum (Hall and Whitfield). (W.)
Orthodesma rectum Hall and Whitfield. (W.)
Orthodesma subangulatum Ulrich. (Wh.)
Ortonella hainesi (Miller). (Wh.)
Oxydiscus magnus (Miller). (Wh?)
Pachydictya fenestelliformis (Nicholson). (W., L.)
Paleschara beani (James). (W.)
Pasceolus camdenensis Foerste.
Peronopora decipiens (Rominger). (A., E.)
Petigopora offula Ulrich and Bassler. (A.)
Petraster speciosus (Miller and Dyer).
Phragmolites dyeri (Hall). (W.)
Platystrophia acutilirata (Conrad). (Wh.)
Platystrophia acutilirata prolongata Foerste. (Wh.)
Platystrophia acutilirata senex (Cumings). (Wh.)
Platystrophia annieana Foerste. (W.)
Platystrophia clarksvillensis Foerste. (W., L.)
Platystrophia cypha conradi Foerste. (A.)
Platystrophia cypha versaillesensis Foerste. (W., L.)
Platystrophia laticosta (Meek). (W.)
Platystrophia moritura (Cumings). (E.)
Platystrophia wallowayi Foerste. (A.)
Plectambonites rugosus clarksvillensis Foerste. (W.)
Plectorthis (*Austinella*) *scovillei* (Miller). (W.)
Plethospira striata Ulrich. (W.)
Primitia cincinnatiensis (Miller). (A., W.)
Primitia lativia Ulrich. (Wh.)
Primitia medialis Ulrich. (W?)
Primitia milleri Ulrich. (W.)
Proboscina auloporoides (Nicholson).
Proboscina frondosa (Nicholson). (A., W.)
Promopalæaster bellulus Schuchert. (W.)
Promopalæaster exculptus (Miller). (W. or L.)
Promopalæaster granulosus (Hall).
Promopalæaster magnificus (Miller). (W. or L.)
Promopalæaster spinulosus (Miller and Dyer). (W.)
Promopalæaster wykoffi (Miller and Gurley).
Protaræa richmondensis Foerste. (W., L., Wh., E.)
Protaræa richmondensis papillata Foerste. (Wh.)
Protostigma sigillaroides Lesquereux.
Psiloconcha elliptica Ulrich. (W.)

Psiloconcha grandis Ulrich. (W.)
Psiloconcha subrecta Ulrich. (W.)
Pterinea corrugata (James). (W.)
Pterinea (*Caritodens*) *demissa* (Conrad). (A., W., L., Wh., E.)
Pterinea subquadrata James. (W.)
Ptilodictya flagellum Nicholson. (L.)
Ptilodictya magnifica Miller. (Wh.)
Ptilodictya nodosa James. (L., Wh.)
Ptilodictya plumaria James. (Wh.)
Rafinesquina alternata Conrad var. (A., W., L. Wh., E.)
Raphistoma richmondense Ulrich. (Wh.)
Reteocrinus magnificus Miller. (W.)
Reteocrinus nealli (Hall). (W., L.)
Rhaphanocrinus sculptus (Miller). (L.)
Rhinidictya lata (Ulrich). (W.)
Rhombotrypa quadrata (Rominger). (W., L., Wh. E.)
Rhombotrypa subquadrata (Ulrich). (W.)
Rhopalonaria venosa Ulrich. (A., W.)
Rhynchotrema capax (Conrad). (W., L., Wh., E.)
Rhynchotrema dentatum Hall. (Wh.)
Rhynchotrema dentatum arnheimense Foerste. (A.)
Rhynchotrema perlamellosum (Whitfield). (W., L., Wh., E.)
Rhytimya byrnesi (Miller). (W., Wh.)
Rhytimya faberi (Miller).
Rhytimya lunulata (Whitfield).
Rusophycus biloba Vanuxem. (A., W., L., Wh., E.)
Salpingostoma richmondense Ulrich. (Wh.)
Schizolopha moorei Ulrich. (W., Wh.)
Schuchertia laxata Schuchert. (W.)
Scolithus delicatulus James.
Sinuites cancellata (Hall). (A., W., L., Wh., E.)
Sinuites subcompressus (Ulrich). (W.)
Spatiopora corticans (Nicholson). (W.)
Spatiopora montifera Ulrich. (W.)
Spatiopora tuberculata (Milne-Edwards and Haime). (W.)
Sphenolium cuneiforme (Miller). (W.)
Sphenolium richmondense Miller. (Wh.)
Stigmatella catenulata Cumings and Galloway. (A.)
Stigmatella crenulata Ulrich and Bassler. (W.)
Stigmatella incrustans Cumings and Galloway. (L.)
Stigmatella interporosa Ulrich and Bassler. (W.)
Stigmatella personata Ulrich and Bassler. (W.)
Stigmatella spinosa Ulrich and Bassler. (W.)
Streptaster septembrachiatus (Miller and Dyer). (L., E.)
Streptelasma dispandum Foerste. (W.)
Streptelasma divaricans (Nicholson). (W., L., Wh.)
Streptelasma divaricans angustatum Foerste. (Wh.)
Streptelasma insolitum Foerste. (Wh.)
Streptelasma rusticum Billings. (W., L., Wh., E.)
Streptospongia labyrinthica Ulrich. (A.)
Stromatocerium huronense (Billings).
Stromatocerium montiferum (Ulrich). (Wh., S.)
Stromphomena concordensis Foerste. (A., W.)
Strophomena neglecta (James). (W.)
Strophomena nutans Meek. (W.)
Strophomena planumbona (Hall). (W., L.)
Strophomena planumbona elongata (James). (W.)
Strophomena planumbona gerontica Foerste. (W.)
Strophomena planumbona subtenta (Hall). (W., L.)
Strophomena sulcata (Verneuil). (W., L., Wh.)
Strophomena vetusta (James). (W., Wh.)
Strophomena vetusta approximata (James). (L. or Wh.)
Strophomena vetusta precursor Foerste. (W.)
Synhomalonotus christyi (Hall). (W.)
Tæniaster elegans Miller. (W. or L.)
Tanaocrinus typus Wachsmuth and Springer. (W. or L.)
Tetradella lunatifera (Ulrich). (W., L., Wh., E.)
Tetradella] *quadrilirata* (Hall and Whitfield). (W. L., Wh., E.)
Tetradella simplex (Ulrich). (W., L., Wh., E.)
Tetradium approximatum Ulrich. (W., L., Wh., E.)
Trematis millepunctata Hall. (A., W., L., Wh., E.)
Trematis quincuncialis Miller and Dyer. (W.)
Trematis reticularis (Miller).
Trochonema madisonense Ulrich. (Wh., S.)
Ulrichia nodosa (Ulrich). (A., W., L., Wh., E.)
Urasterella grandis (Meek).
Whiteavesia pholadiformis (Hall). (W.)
Whitella obliqua Ulrich. (W.)
Whitella ohioensis Ulrich. (W.)
Whitella quadrangularis (Whitfield). (W.)
Whitella subovata Ulrich. (W.)
Whitella umbonata Ulrich. (W.)
Xenocrinus baeri (Meek). (L.)
Xenocrinus penicillus Miller. (L.)
Zygospira kentuckiensis James. (W.)
Zygospira modesta Hall. (A., W., L., Wh., E.)

RICHMOND (MAQUOKETA) OF UPPER MISSISSIPPI VALLEY.

(Maquoketa is here used in a broad sense for the Richmond shales of the Upper Mississippi Valley.)

Ambonychia illinoisensis Worthen.
Amphilichas bicornis (Ulrich).
Amphilichas clermontensis Slocom.
Amphilichas rhinoceros Slocom.
Anaphragma mirabile Ulrich and Bassler.
Aparchites fimbriatus (Ulrich).
Archinacella rotunda Ulrich and Scofield.
Batostoma? rugosum (Whitfield).
Batostoma varians (James).
Bellerophon lirata Hall.
Bellerophon patersoni Hall.
Bumastus beckeri Slocom.
Byssonychia tenuistriata Ulrich.
Calloporella? lens (Whitfield).
Calloporella? nodulosa Ulrich.
Calymene fayettensis Slocom.
Calymene gracilis Slocom.
Calymene mammillata Hall.
Ceramoporella? irregularis (Whitfield).
Ceramoporella stellata Ulrich.
Ceraurus elginensis Slocom.
Clidophorus neglectus Hall.
Climacograptus putillus (Hall).
Climacograptus ulrichi Ruedemann.
Constellaria polystomella Nicholson.
Constellaria punctata (Whitfield).
Coleolus iowensis James.
Cornulites sterlingensis (Meek and Worthen).
Corynotrypa abrupta Bassler.
Corynotrypa curta Bassler.
Corynotrypa medialis Bassler.
Crepipora hemispherica Ulrich.

Ctenobolbina emaciata (Ulrich).
Ctenodonta calvini Ulrich.
Ctenodonta fecunda (Hall).
Ctenodonta simulatrix Ulrich.
Cybeloides iowensis Slocom.
Cycloceras perroti (Clarke).
Cyrtoceras whitneyi Hall.
Cyrtodonta grandis luculenta (Sardeson).
Cyrtolites conradi Hall.
Cyrtolites disjunctus Ulrich and Scofield.
Dalmanella corpulenta (Sardeson).
Dalmanella futilis (Sardeson).
Dalmanella ignota (Sardeson).
Dalmanella macrior (Sardeson).
Dalmanella porrecta (Sardeson).
Dendrocrinus angustatus (Meek and Worthen).
Dendrocrinus oswegoensis Meek and Worthen.
Dicranopora fragilis (Billings).
Dinorthis proavita (Winchell and Schuchert).
Diplograptus peosta Hall.
Encrinurus cristatus Clarke.
Encrinurus pernodosus Slocom.
Endoceras bristolense Miller.
Endoceras egani Miller.
Eurydictya sterlingensis Ulrich.
Fenestella granulosa Whitfield.
Halysites gracilis Hall.
Hormotoma gracilis multivolvis Ulrich and Scofield.
Homotrypella rustica Ulrich.
Hyolithes parvisculus (Hall).
Iocrinus crassus (Meek and Worthen).
Isotelus iowensis (Owen).
Leptæna unicostata (Meek and Worthen).
Leptobolus occidentalis Hall.
Lingula beltrami Winchell and Schuchert.
Lingula (*Palæoglossa*) *deflecta* (Winchell und Schuchert).
Lingula philomela Billings.
Lingulasma schucherti Ulrich.
Lingulops whitfieldi Hall.
Lioclemella annulifera (Whitfield).
Lioclemella fusiformis (Whitfield).
Lioclemella nitida (Ulrich).
Lioclemella solidissima (Whitfield).
Lophospira acuminata Ulrich and Scofield.
Lophospira quadrisulcata Ulrich and Scofield.
Meekospira subconica Ulrich and Scofield.
Megalaspis beckeri Slocom.
Modiolopsis excellens Ulrich.
Monotrypa? nodosa Ulrich.
Nileus vigilans (Meek and Worthen).
Onchometopus susæ (Whitfield).
Orbiculoidea lamellosa (Hall).
Orthoceras sociale Hall.
Platystrophia acutilirata (Conrad).
Plectambonites precosis (Sardeson).
Plectambonites recedens (Sardeson).
Plectambonites saxeus (Sardeson).
Plectorthis (*Austinella*) *whitfieldi* (N. H. Winchell).
Plethospira semele (Hall).
Pleurotomaria (*?Lophospira*) *depauperata* Hall.
Porocrinus crassus Meek and Worthen.
Primitia dorsicornis (Ulrich).
Primitia gibbera Ulrich.
Primitia impressa Ulrich.
Primitia tumidula Ulrich.
Pterygometopus fredricki Slocom.
Pterymetopus larrabeei Slocom.
Rafinesquina kingi (Whitfield).
Rhynchotrema neenah (Whitfield).
Saffordia sulcodorsata (Ulrich).
Saffordia ventralis Ulrich.
Salpingostoma imbricatum Ulrich and Scofield.
Schizotreta minutula Winchell and Schuchert.
Schizotreta pelopea (Billings).
Sinuites concinna (Ulrich and Scofield).
Spatiopora iowensis Ulrich.
Sphærocoryphe maquoketensis Slocom.
Strophomena acuta (Winchell and Schuchert).
Strophomena cardinalis (Whitfield).
Strophomena fluctuosa occidentalis Foerste.
Strophomena neglecta (James).
Strophomena planodorsata Winchell and Schuche
Strophomena wisconsinensis Whitfield.
Tentaculites oswegoensis Meek and Worthen.
Thaleops ovata Conrad.
Trematis(?) pustulosa Hall.
Trematopora?? granulata Whitfield.
Triplecia ulrichi Winchell and Schuchert.
Whitella obliqua Ulrich.
Whitella quadrangularis (Whitfield).
Whitella sterlingensis (Meek and Worthen).

RICHMOND (FERNVALE) OF ILLINOIS, TENNESSE MISSOURI, ARKANSAS, AND OKLAHOMA.

Anolotichia ponderosa Ulrich.
Arthroclema angulare Ulrich.
Constellaria parva Ulrich.
Constellaria polystomella Nicholson.
Corynotrypa turgida (Ulrich).
Crepipora hemispherica Ulrich.
Cyphotrypa wilmingtonensis Ulrich and Bassler.
Dalmanella tersa (Sardeson).
Dekayella singularis (Ulrich).
Dinorthis subquadrata (Hall).
Diplotrypa? dubia Ulrich.
Eurydictya montifera Ulrich.
Favositella epidermata (Ulrich).
Helopora imbricata Ulrich.
Hemiphragma imperfectum (Ulrich).
Heterotrypa affinis (Ulrich).
Homotrypa gelasinosa Ulrich.
Homotrypa splendens Bassler.
Homotrypella contexta Ulrich.
Lingulasma schucherti Ulrich.
Lingulops cliftonensis Foerste.
Lioclema wilmingtonense Ulrich.
Nicholsonella peculiaris Cumings and Galloway.
Orbignyella lamellosa (Ulrich).
Pachydictya fenestelliformis corticula Ulrich.
Pachydictya? firma Ulrich.
Pachydictya gigantea Ulrich.
Pachydictya? splendens Ulrich.
Parastrophia divergens Hall and Clarke.
Phænopora wilmingtonensis Ulrich.
Platystrophia acutilirata (Conrad).
Plectorthis (*Austinella*) *kankakensis* (McChesney).
Protocrisina exigua Ulrich.
Ptilodictya magnifica Miller.
Ptilotrypa obliquata Ulrich.
Rhombotrypa crassimuralis (Ulrich).
Rhombotrypa quadrata (Rominger).
Rhynchotrema manniense Foerste.
Rhynchotrema perlamellosum (Whitfield).
Sinuites cancellata (Hall).
Strophomena planodorsata Winchell and Schuchert

RICHMOND OF ISLAND OF ANTICOSTI, QUEBEC.

(English Head=E.; Charleton=C.)

Actinoceras anticostiense Billings. (E., C.)
Actinoceras fulger (Billings). (C.)
Actinoceras sedgwicki (Billings). (E., C.)
Aparchites minutissimus (Hall). (C.)
Apsidoceras magnificum (Billings). (C.)
Archinacella estella (Billings). (E.)
Arthroclema angulare Ulrich. (E., C.)
Ascoceras newberryi Billings. (E., C.)
Beatricea nodulosa Billings. (C.)
Beatricea undulata Billings. (C.)
Bellerophon misera Billings. (E.)
Bellerophon solitarius Billings. (E.)
Beyrichia parallela (Ulrich). (C.)
Billingsites canadensis (Billings). (E., C.)
Bollia semilunata Jones. (E., C.)
Brachyaspis alacer (Billings). (C.)
Brachyaspis altilis Raymond. (E., C.)
Brachyaspis notans (Billings). (E.)
Bumastus orbicaudatus (Billings). (E., C.)
Bythocypris cylindrica (Hall). (E., C.)
Bythocypris? lindstrœmi Jones. (E., C.)
Bythocypris? obtusa Jones. (E., C.)
Bythopora striata Ulrich. (C.)
Calapœcia anticostiensis (Billings). (E., C.)
Carabocrinus(?) tuberculatus Billings. (E., C.)
Catazyga headi anticostiensis (Billings). (E., C.)
Ceraurinus icarus (Billings). (E., C.)
Ceraurus numitor (Billings). (E.)
Chasmops anticostiensis (Billings). (C.)
Chasmatopora granistriata (Ulrich). (C.)
Chonetes primigenius Twenhofel. (C.)
Clathrospira subconica Ulrich. (E., C.)
Climacograptus (*Mesograptus*) *putillus* (Hall). (E.)
Clitambonites diversus (Shaler). (C.)
Columnaria calicina Nicholson.
Conularia asperata Billings. (E.)
Conularia splendida Billings. (C.)
Cornulites flexuosus Hall. (E., C.)
Corynotrypa dissimilis (Vine). (C.)
Ctenobolbina hammelli (Miller). (C.)
Cupulocrinus latibrachiatus (Billings).
Cycloceras crocus (Billings). (E.)
Cyclonema thalia Billings. (C.)
Cyrtodonta anticostiensis Billings. (E., C.)
Cyrtodonta? harrietta Billings. (E., C.)
Cyrtodonta? insularis Billings. (E.)
Dalmanella meeki (Miller). (E., C.)
Dicranopora emacerata (Nicholson). (C.)
Dicranopora fragilis (Billings). (E., C.)
Dictyonella anticostiensis (Billings). (C.)
Encrinurus multisegmentatus (?Portlock) Billings. (E.)
Eridotrypa simulatrix (Ulrich). (C.)
Goniotrypa bilateralis Ulrich. (C.)
Halysites gracilis Hall.
Hebertella maria (Billings). (E., C.)
Helopora imbricata Ulrich. (C.)
Hormotoma gracilis (Hall). (E., C.)
Hormotoma multivolvis (Billings).
Hormotoma teretiformis (Billings). (C.)
Hudsonaster rugosus (Billings). (C.)
Hyattidina charletona Twenhofel. (C.)
Ischyrinia winchelli Billings. (E., C.)
Isotelus gigas Dekay. (E., C.)
Kionoceras magnisulcatum (Billings). (C.)
Krausella anticostiensis (Jones). (E., C.)
Leptæna nitens (Billings). (E., C.)
Leptæna reticulata (Shaler). (C.)
Licrophycus formosum Billings. (E.)
Licrophycus robustum Billings. (E.)
Licrophycus vagans Billings. (E., C.)
Lingula(?) canadensis Billings. (C.)
Lingula (*Pseudolingula*) *elegantula* (Shaler). (E., C.)
Lingula forbesi Billings. (E., C.) .
Lioclemella nitida (Ulrich). (C.)
Liospira americana (Billings). (E., C.)
Litoceras hercules (Billings). (C.)
Lophospira circe (Billings). (E.)
Lophospira modesta (Billings). (E., C.)
Lophospira varians (Billings). (E.)
Lyellia affinis (Billings). (C.)
Lyopora goldfussi (Billings). (C.)
Macrocypris? subcylindrica Jones. (E.)
Metoptoma? alceste Billings. (E.)
Nematopora lineata (Billings). (C.)
Orthoceras formosum Billings. (C.)
Orthoceras lyelli Billings. (C.)
Orthoceras sieboldi Billings. (E., C.)
Pachydictya? firma Ulrich. (C.)
Pachydictya hexagonalis Ulrich. (C.)
Paleofavosites asper (D'Orbigny). (E., C.)
Parastrophia lenticularis (Billings). (E., C.)
Phacelopora pertenuis Ulrich. (E.)
Phragmolites desideratus (Billings). (E.)
Phragmolites pannosus (Billings). (E., C.)
Plectambonites sericus (Sowerby). (E., C.)
Pleurocystites anticostiensis (Billings). (C.)
Poterioceras obesum (Billings). (E., C.)
Primitia lativia Ulrich. (C.)
Prœtus alaricus Billings. (C.)
Protocrisina exigua Ulrich. (C.)
Protozeuga anticostiana Twenhofel. (E., C.)
Pterinea bellilineata Billings. (E., C.)
Pterinea prolifica Billings. (E., C.)
Pterinea varistriata Billings. (C.)
Pterotheca transversa (?Salter) Billings. (E., C.)
Ptilodictya canadensis Billings. (C.)
Ptilodictya flagellum Nicholson. (C.)
Ptilodicta magnifica Miller. (E., C.)
Ptilodictya whiteavesi Ulrich. (E., C.)
Rafinesquina ceres (Billings). (E. C.)
Rafinesquina imbrex (?Pander). (C.)
Reteocrinus fimbriatus Billings. (C.)
Rhinidictya nitidula (Billings). (C.)
Rhipidomella sola (Billings). (C.)
Rhynchotrema? anticostiense (Billings). (E., C.)
Rhynchotrema? janea Billings. (C.)
Rhynchotrema perlamellosum (Whitfield). (E., C.)
Rhytimya emma (Billings). (E., C.)
Særichnites abruptus Billings. (E.)
Salpingostoma canadense (Billings). (E., C.)
Salpingostoma fraternum (Billings). (E.)
Sceptropora facula Ulrich. (E., C.)
Schizocrania filosa (Hall). (C.)
Schmidtella sublenticularis (Jones). (E., C.)
Schuchertella pecten (Roemer). (C.)
Spyroceras balteatum (Billings). (C.)
Spyroceras ferum (Billings). (E., C.)
Streptelasma angulatum (Billings). (E., C.)
Streptelasma rusticum (Billings). (C.)
Strophomena antiquatum Sowerby. (C.)

Strophomena fluctuosa Billings. (E., C.)
Strophomena hecuba Billings. (E., C.)
Subulites richardsoni Billings. (C.)
Tetradella lunatifera (Ulrich). (C.)
Tetradella simplex (Ulrich). (C.)
Tripteroceras xiphias (Billings). (E.)
Ulrichia nodosa Ulrich. (C.)
Vanuxemia ungulata (Billings). (E.)
Whitella plebeia (Billings). (E., C.)
Whitella? sigmoidea (Billings). (E., C.)
Zaphrentis affinis Billings. (C.)

RICHMOND (GAMACHIAN—ELLIS BAY) ISLAND OF ANTICOSTI, QUEBEC.

Actinoceras anticostiense (Billings).
Actinoceras sedgwicki (Billings).
Ascoceras anticostiense Billings.
Ascoceras newberryi Billings.
Atrypa marginalis Dalman.
Beatricea nodulosa Billings.
Beatricea undulata Billings.
Brachyaspis alacer (Billings).
Brachyaspis notans (Billings).
Bumastus orbicaudatus Billings.
Calapœcia anticostiensis Billings.
Camerotœchia nutrix (Billings).
Ceraurinus icarus (Billings).
Chasmatopora angulata (Hall).
Chasmops anticostiensis (Billings).
Chonetes primigenius Twenhofel.
Clathrodictyon vesiculosum Nicholson and Murie.
Clathrospira subconica Ulrich and Scofield.
Clionychia superba (Billings).
Clitambonites diversus (Shaler).
Columnaria alveolata Goldfuss.
Corynotrypa dissimilis (Vine).
Cycloceras crocus (Billings).
Cyclonema thalia Billings.
Cyphotrypa bulbosa (Billings).
Cyrtospira notata (Billings).
Dalmanella meeki (Miller).
Dalmanella ruida (Billings).
Diaphorostoma humile (Billings).
Dinorthis porcata anticostiensis (Shaler).
Encrinurus multisegmentatus Billings.
Favosites forbesi Edwards and Haime.
Glauconome strigosa Billings.
Halysites catenularia Linnaeus.
Hebertella maria Billings.
Helopora formosa Billings.
Helopora lineopora Billings.
Hindella prinstana (Billings).
Hindella umbonata (Billings).
Hormotoma gigantea (Billings).
Hormotoma gracilis (Hall).
Ischadites insularis Billings.
Isotelus gigas Dekay.
Leptæna nitens (Billings).
Leptæna reticulata (Shaler).
Leptæna rhomboidalis (Wilkens).
Lingula (*Pseudolingula*) *elegantula* (Shaler).
Lingula forbesi Billings.
Lingula insularis Billings.
Liospira americana (Billings).
Liospira helena (Billings).
Lophospira? papillosa (Billings).
Lophospira sybellina (Billings).
Lyellia affinis (Billings).
Lyellia exigua (Billings).
Lyellia speciosa (Billings).
Nematopora lineata (Billings).
Oncoceras fragile (Billings).
Orthis lamellosa Twenhofel.
Orthis laurentina (Billings).
Orthoceras sieboldi Billings.
Oxydiscus acutus (?Sowerby) Billings.
Pachydictya crassa (Hall).
Paleofavosites aspera (D'Orbigny).
Parastrophia lenticularis (Billings).
Parastrophia reversa (Billings).
Pasceolus halli Billings.
Phænopora ensiformis Hall.
Phænopora excellens (Billings).
Phragmolites desideratus (Billings).
Platystrophia regularis Shaler.
Plectambonites sericeus (Sowerby).
Protarea tenuis (Billings).
Pterinea striata Billings.
Pterinea varistriata Billings.
Ptilodictya gladiola Billings.
Rafinesquina ceres (Billings).
Rafinesquina imbrex (Pander).
Rhipidomella uberis Billings.
Rhipidomella uberis rhynchonelliformis (Shaler).
Rhynchonella? janea Billings.
Rhynchotrema anticostiensis (Billings).
Salpingostoma canadense (Billings).
Schuchertella pecten (Roemer).
Sphærocoryphe salteri Billings.
Streptelasma selectum (Billings).
Strombodes diffluens Edwards and Haime.
Strophomena fluctuosa Billings.
Strophomena hecuba Billings.
Strophomena semiovalis Shaler.
Subulites richardsoni Billings.
Technophorus plicatus (Billings).
Vanuxemia acutumbona (Billings).
Whitella? sigmoidea (Billings).
Zaphrentis affinis Billings.

RICHMOND (MISCELLANEOUS).

Arthroclema angulare Ulrich. (Manitoba.)
Batostoma manitobense Ulrich. (Manitoba.)
Beyrichia parallela (Ulrich). (Manitoba.)
Bythopora striata Ulrich. (Manitoba.)
Catazyga headi (Billings). (Quebec.)
Catazyga headi borealis (Billings). (Quebec.)
Ceraurinus icarus (Billings). (Manitoba.)
Ceraurinus marginatus Barton. (Lake Huron.)
Climacograptus mississippiensis Ruedema (Okla.)
Climacograptus ulrichi Ruedemann. (Okla.)
Columnaria alveolata rigida (Billings). (Quebe
Columnaria calicina (Nicholson). (Ontario.)
Columnaria (*Palæophyllum*) *stokesi* (Edwards Haime). (Manitoba.)
Columnaria (*Palæophyllum*) *thomi* (Hall). (T
Conocardium antiquum (Owen). (Manitoba.)
Ctenodonta iphigenia (Billings). (Lake Huron.
Cyclocystoides huronensis Billings. (Lake Hu
Cyphaspis(?) *frobisheri* Emerson. (Arctic Amer
Cyrtoceras ligarius Billings. (Lake Huron.)
Cyrtoceras lysander Billings. (Lake Huron.)

Cyrtoceras postumius Billings. (Lake Huron.)
Cyrtodonta ponderosa Billings. (Lake Huron.)
Dicranopora fragilis (Billings). (Manitoba.)
Diplograptus crassitestus Ruedemann. (Okla.)
Drepanella richardsoni canadensis Ulrich. (Ontario.)
Drepanella symmetrica (Emerson). Arctic America.)
Eurychilina frobisheri (Emerson). (Arctic America.)
Eurychilina manitobense Ulrich. (Manitoba.)
Goniotrypa bilateralis Ulrich. (Manitoba.)
Halysites catenularia quebecensis Lambe. (Quebec.)
Halysites gracilis (Hall). (Manitoba, etc.)
Helicotoma brocki Foerste. (Lake Huron.)
Leperditia subcylindrica Ulrich. (Manitoba.)
Leptæna nitens Billings. (Manitoba.)
Leptobolus occidentalis Hall. (Okla.)
Licrophycus hudsonicum Billings. (Lake Huron.)
Liospira helena (Billings). (Quebec.)
Litoceras insigne (Whiteaves). (Manitoba.)
Lophospira beatrice Foerste. (Quebec.)
Lyopora goldfussi (Billings). (Ontario.)
Monticulipora parasitica plana Ulrich. (Manitoba.)
Onchometopus emoryi (Hall). (Tex.)
Onchometopus susae (Whitfield). (Manitoba.)
Orthoceras piso Billings. (Lake Huron.)
Pachydictya hexagonalis Ulrich. (Manitoba.)
Petigopora scabiosa Ulrich. (Manitoba.)
Pleurotomaria muralis Owen. (Manitoba.)
Primitia lativia Ulrich. (Manitoba.)
Protaræa vetusta magna Whiteaves. (Manitoba.)
Ptilodictya whiteavesi Ulrich. (Manitoba.)
Rafinesquina ceres (Billings). (Manitoba.)
Rafinesquina lata Whiteaves. (Manitoba.)
Rhynchotrema argenturbica (White). (N. Mex.)
Rhytimya? kagawongensis Foerste. (Lake Huron.)
Streptelasma latusculum trilobatum (Whiteaves). (Manitoba.)
Streptelasma robustum Whiteaves. (Manitoba.)
Strophomena concordensis huronensis Foerste. (Lake Huron.)
Strophomena fluctuosa Billings. (Manitoba.)
Tæniaster meafordensis Foerste. (Ontario.)
Vallatotheca manitoulini Foerste. (Lake Huron.)
Vanuxemia bayfieldi Billings. (Lake Huron.)

UPPER MEDINAN (GIRARDEAU) OF MISSOURI AND ILLINOIS.

Calymene dubia Savage.
Camarotœchia? festinata Savage.
Cornulites tenuistriatus (Meek and Worthen).
Cyclocystoides illinoisensis Miller and Gurley.
Cyphaspis girardeauensis Shumard.
Dalmanella modesta Savage.
Diaphorostoma niagaraense immaturum Savage.
Encrinurus deltoideus Shumard.
Glyptocrinus? fimbriatus Shumard.
Lingulops ovata Savage.
Modiolopsis concinna Savage.
Monotrypa rectimuralis Ulrich.
Nematopora alternata Ulrich.
Nematopora delicatula Ulrich.
Nematopora fragilis Ulrich.
Nematopora retrorsa Ulrich.
Odontopleura halli (Shumard).
Phacelopora pertenuis Ulrich.
Phragmolites imbricatus (Meek and Worthen).
Proetus princeps Savage.
Pterinea formosa Savage.
Ptychocrinus splendens (Miller).
Rafinesquina? delicatula Savage.
Rafinesquina mesicosta (Shumard).
Rhynchotrema? illinoisense Savage.
Schuchertella missouriensis (Shumard).
Schuchertia ordinaria Schuchert.
Trematopora calloporoides Ulrich.
Trematopora debilis Ulrich.

UPPER MEDINAN (EDGEWOOD) OF ILLINOIS AND MISSOURI.

Atrypa præmarginalis Savage.
Atrypa putilla (Hall and Clarke.)
Atrypa tubulistriata Savage.
Bellerophon consimilis Savage.
Bucania exigua Foerste.
Calapœcia favositoidea Savage.
Calvinia edgewoodensis Savage.
Camarotœchia antiqua Savage.
Camarotœchia? concinna Savage.
Clathrodictyon vesiculosum Nicholson and Murie.
Clorinda? thebesensis Savage.
Colpomya abrupta Savage.
Ctenodonta subelliptica Savage.
Cyclonema daytonense Foerste.
Cypricardinia subquadrata Savage.
Dalmanella edgewoodensis Savage.
Dalmanites danæ Meek and Worthen.
Dawsonoceras tenuilineatum Savage.
Deltacrinus alleni (Rowley).
Diaphorostoma niagarense (Hall).
Favosites sublongus Savage.
Gissocrinus? problematicus Rowley.
Glyptocrinus inseparatus Rowley.
Glyptocrinus inseparatus carinatus (Rowley).
Glyptocrinus inseparatus pentagonus Rowley.
Hindella? ambigua Savage.
Holopea minuta Savage.
Homœospira fiscellostriata Savage.
Homœospira subcircularis Savage.
Hormotoma tenera Savage.
Isotelus longævus Savage.
Leptæna rhomboidalis (Wilckens).
Liospira affinis (Foerste).
Lophospira fasciata Savage.
Lophospira thebesensis Savage.
Lyellia thebesensis Foerste.
Metopolichas breviceps clintonensis (Foerste).
Orthis flabellites fissiplicata (Foerste).
Pentamerus parvulus Savage.
Platystrophia daytonensis (Foerste).
Poleumita bellasculptilis Savage.
Proetus determinatus Foerste.
Protozeuga sulcocarinata Savage.
Pterinea thebesensis Meek and Worthen.
Rafinesquina mesicosta (Shumard).
Rafinesquina mesicosta mesistria Savage.
Rhipidomella tenuilineata Savage.
Rhynchonella? janea Billings.
Rhynchotreta parva Savage.
Rhynchotreta thebesensis Foerste.
Rhynchotreta thebesensis multistriata Savage.
Schuchertella missouriensis (Shumard).
Schuchertella missouriensis convexa Savage.

Schuchertella propinqua (Meek and Worthen).
Straparollus pumilis Savage.
Stropheodonta (*Brachyprion*) *latisculptilis* (Savage).
Strophcodonta (*Brachyprion*) *stropheodontoides* (Savage).
Whitfieldella(?) *billingsana* (Meek and Worthen).
Whitfieldella ovoides Savage.
Whitfieldella? speciosa Savage.
Zaphrentis ambigua Savage.
Zaphrentis subregularis Savage.

UPPER MEDINAN (CHANNAHON) OF ILLINOIS.

Callonema pristina Savage.
Cyphaspis intermedia Weller.
Dawsonoceras tenuilineatum Savage.
Diaphorostoma illinoisensis Savage.
Leperditia illinoisensis Savage.
Lingulops illinoisensis Savage.
Metopolichas ferrisi Weller.
Pholidops subelliptica Savage.
Proetus channahonensis Weller.
Pterinea elegans Savage.
Rhynchotreta intermedia Savage.
Rhynchotreta lepida Savage.
Schuchertella curvistriata Savage.
Whitfieldella acuminata Savage.
Whitfieldella ovoides Savage.
Zaphrentis ambigua Savage.
Zaphrentis subregularis Savage.

UPPER MEDINAN (BRASSFIELD) OF KENTUCKY, OHIO, TENNESSEE, MISSOURI, ILLINOIS, ARKANSAS, AND OKLAHOMA.

Acervularia clintonensis Nicholson.
Acidaspis brevispinosa Foerste.
Actinoceras daytonense (Foerste).
Actinoceras latonummulatum (Foerste).
Actinoceras turgidonummulatum (Foerste).
Actinoceras youngi (Foerste).
Aspidopora parmula (Foerste).
Aspidopora parmula fenestelliformis Foerste.
Atrypa laticorrugata Foerste.
Atrypa marginalis Dalman.
Aulopora precius compressus Foerste.
Bucania exigua Foerste.
Bucania fiscellostriata Foerste.
Bucania opertus (Foerste).
Bumastus niagarensis (Whitfield).
Calymene niagarensis Hall.
Calymene vogdesi Foerste.
Camarotœchia(?) *acinus convexa* (Foerste).
Camarotœchia (*Stegerhynchus*) *neglecta* (Hall).
Camarotœchia (*Stegerhynchus*) *neglecta cliftonensis* Foerste.
Camarotœchia (*Stegerhynchus*) *whitei præcursor* (Foerste).
Ceramopora? expansa (James).
Chasmatopora angulata (Hall).
Clathropora frondosa clintonensis (Hall and Whitfield).
Clidochirus americanus Springer.
Clidophorus ferrugineum (Foerste).
Coleolus clintonensis Foerste.
Conularia bilineata Foerste.
Conularia nagiarensis Hall.
Cornulites distans Hall.
Corynotrypa elongata (Vine).
Crania? dubia Foerste.
Ctenodonta elliptica (Hall).
Ctenodonta minima (Foerste).
Ctenodonta ohioensis Bassler.
Cuneamya caswelli (Foerste).
Cyathophyllum facetus Foerste.
Cycloceras amycus (Hall).
Cycloceras inceptum (Foerste).
Cycloceras inceptum acceleratum (Foerste).
Cycloceras novacarlislense (Foerste).
Cyclora alta Foerste.
Cyclospira(?) *sparsiplica* Foerste.
Cyphaspis clintoni Foerste.
Cypricardinia undulostriata (Hall).
Cyrtoceras clintonense Foerste.
Cyrtoceras (*Glyptoceras*) *eatonense* (Claypole).
Cyrtoceras (*Glyptoceras*) *subcompressum* Beecher.
Cyrtodonta? ferruginea (Hall and Whitfield).
Cyrtolites youngi Foerste.
Dalmanella elegantula (Dalman).
Dalmanella elegantula parva (Foerste).
Dalmanites werthneri Foerste.
Deiphon forbesi Barrande.
Diaphorostoma niagarense (Hall).
Dictyonema pertenue Foerste.
Dictyonema scalariforme Foerste.
Dictyonella reticulata Hall.
Discosurus conoideus Hall.
Elpe ulrichi Foerste.
Encrinurus thresheri Foerste.
Enterolasma geometricum (Foerste).
Favosites favosideus (Hall).
Favosites niagarensis Hall.
Gomphoceras ortoni Foerste.
Hallopora magnopora (Foerste).
Hebertella daytonensis Foerste.
Hebertella fausta (Foerste).
Hemitrypa ulrichi Foerste.
Hindella umbonata (Billings).
Homotrypa? confluens (Foerste).
Hormotoma subulata (Conrad).
Illænus ambiguus Foerste.
Illænus daytonensis Hall and Whitfield.
Kionoceras crawfordi (Foerste).
Leptæna rhomboidalis (Wilckens).
Lindströmia gainesi (Davis).
Lioclemella ohioensis (Foerste).
Liospira affinis (Foerste).
Meekospira planilateralis (Foerste).
Metopolichas breviceps clintonensis (Foerste).
Modiolopsis rhomboidea (Conrad).
Modiolopsis subrhomboidea Simpson.
Mytilarca foerstei Clarke and Ruedemann.
Odontopleura ortoni (Foerste).
Orthis flabellites Foerste.
Orthis flabellites dinorthis (Foerste).
Orthis flabellites euorthis (Foerste).
Orthis flabellites fissiplicata (Foerste).
Orthis flabellites militaris Foerste.
Orthoceras? clavatum Hall.
Orthoceras erraticum Foerste.
Orthoceras hanoverense Foerste.
Orthoceras ignotum Foerste.
Orthoceras rectum junius Foerste.
Orthoceras rhythmoides (Foerste).
Orthoceras (*Spyroceras?*) *epyroceroides* Foerste.
Orthoceras tenuisiphonatum Foerste.
Pachydictya bifurcata (Hall).

Pachydictya bifurcata instabilis Foerste.
Pachydictya crassa (Hall).
Pachydictya emaciata Foerste.
Pachydictya? famelica (Foerste).
Pachydictya obesa Foerste.
Pachydictya turgida Foerste.
Paleopupa abrupta Foerste.
Phacops pulchellus Foerste.
Phænopora ensiformis Hall.
Phænopora expansa Hall and Whitfield.
Phænopora fimbriata (James).
Phænopora magna (Hall and Whitfield).
Phænopora multifida (Hall).
Platymerella manniensis Foerste.
Platystrophia reversata (Foerste).
Plectambonites transversalis (Wahlenberg).
Plectambonites transversalis prolongatus (Foerste).
Pleurotomaria filitexta Foerste.
Pleurotomaria inexpectans Hall and Whitfield.
Proetus determinatus Foerste.
Pseudosphærexochus? clintoni (Foerste.)
Ptilodictya expansa Hall.
Ptilodictya expansa emarcescens Foerste.
Ptilodictya whitfieldi Foerste.
Ptychophyllum ipomoea Davis.
Rhinopora verrucosa Hall.
Rhipidomella hybrida (Sowerby).
Rhynchotreta simplex Foerste.
Schuchertella tenuis (Hall).
Spyroceras jamesi (Hall and Whitfield).
Straparollus incarinatum Foerste.
Streptelasma hoskinsoni Foerste.
Streptelasma obliquus Foerste.
Striatopora (*Cladopora?*) *proboscidialis* Foerste.
Stricklandinia(?) *dichotoma* Foerste.
Stricklandinia triplesiana Foerste.
Stromatopora indianensis Parks.
Strophonella daytonensis Foerste.
Strophonella striata Hall.
Strophostylus cancellatus (Hall).
Strophostylus cyclostomus (Hall).
Subulites directus Foerste.
Syringopora (*Drymopora*) *fascicularis* Foerste.
Trigonodictya eatonensis Ulrich.
Triplecia ortoni Meek.
Triplecia (*Cliftonia*) *striata* Foerste.
Vinella radiciformis (Vine).
Zaphrentis celator daytonensis (Foerste).

UPPER MEDINAN OF NEW YORK, NEW JERSEY, ETC.

(Shawangunk=S.)

Arthrophycus alleghaniensis (Harlan).
Bucanella trilobata (Conrad).
Dædalus archimedes (Ringueberg).
Dolichopterus otisius (Clarke). (S.)
Euconia? pervetusta (Conrad).
Eurypterus maria Clarke. (S.)
Eusarcus? cicerops (Clarke). (S.)
Fucoides auriformis Hall.
Fucoides heterophyllus Hall.
Holopea conoidea (Hall).
Hughmilleria shawangunk Clarke. (S.)
Leperditia cylindrica (Hall).
Lingula cuneata Conrad.
Modiolopsis orthonota (Conrad).
Modiolopsis primigenia (Conrad).
Oncoceras gibbosum Hall.
Orbiculoidea parmulata (Hall).
Orthoceras multiseptum Hall.
Pleurotomaria litorea Hall.
Pterygotus (*Erettopterus*) *globiceps* Clarke and Ruedemann. (S.)
Rhynchonella? plicata Hall.
Rhynchotreta cuneata americana Hall.
Scolithus verticalis Hall.
Stylonurus (*Ctenopterus*) *cestrotus* (Clarke). (S.)
Stylonurus myops Clarke. (S.)
Whitfieldella oblata (Hall).

UPPER MEDINAN (CATARACT) OF ONTARIO.

Acervularia gracilis (Billings).
Arabellites elegans Hinde.
Arenicolites sparsus Salter.
Brockocystis clintonensis (Parks).
Brockocystis? huronensis (Billings).
Brockocystis tecumseth (Billings).
Bucanella trilobata (Conrad).
Buthotrephis gracilis crassa Hall.
Buthotrephis gracilis intermedia Hall.
Camarotœchia (*Stegerhynchus*) *neglecta* (Hall).
Chasmatopora angulata (Hall).
Chonophyllum belli Billings.
Clathrodictyon vesiculosum Nicholson and Murie.
Clathropora frondosa clintonensis Hall and Whitfield
Cœlospira planoconvexa (Hall).
Cornulites distans Hall.
Cyclonema daytonense Foerste.
Cyrtoceras orestes Billings.
Dalmanella edgewoodensis Savage.
Dalmanella elegantula (Dalman).
Diphyphyllum cæspitosum (Hall).
Diphyphyllum multicaule Hall.
Eunicites chiromorphus Hinde.
Eunicites clintonensis Hinde.
Eunicites coronatus Hinde.
Halysites catenularia Linnæus.
Halysites catenularia microporus (Whitfield).
Hebertella fausta (Foerste).
Helopora fragilis Hall.
Leptæna rhomboidalis (Wilckens).
Lingula clintoni Vanuxem.
Lingula lingulata Hall and Clarke.
Lingula oblata Hall.
Lumbriconereites armatus Hinde.
Lumbriconereites basalis Hinde.
Lumbriconereites triangularis Hinde.
Mesopalæaster(?) *cataractensis* Schuchert.
Mesopalæaster granti (Spencer).
Metopolichas breviceps clintonensis (Foerste).
Modiolopsis orthonota Conrad.
Modiolopsis primigenia Conrad.
Nematopora raripora (Hall).
Œnonites amplus Hinde.
Œnonites fragilis Hinde.
Œnonites infrequens Hinde.
Orthis flabellites Foerste.
Pachydictya crassa (Hall).
Phænopora constellata Hall.
Phænopora ensiformis Hall.
Phænopora explanata Hall.
Phænopora punctata (Nicholson and Hinde).
Planolites vulgaris Nicholson.
Plectambonites transversalis (Wahlenberg).
Proetus determinatus Foerste.
Rhinopora verrucosa Hall.

Rhipidomella hybrida (Sowerby).
Rhynchonella? janea Billings.
Rusophycus clintonense (Dawson).
Sceptropora fustiformis Ulrich.
Schuchertella subplana (Conrad).
Scolithus verticalis Hall.
Staurocephalites niagarensis Hinde.
Strophostylus cancellatus (Hall.)
Tentaculites neglectus Nicholson and Hinde.
Uncinulus stricklandi (Sowerby).
Zaphrentis bilateralis (Hall).

LOWER CLINTON OF NEW YORK AND APPALACHIAN VALLEY TO SOUTHWEST VIRGINIA.

(Species marked * may be of Upper Clinton age.)

Actinoceras vertebratum (Hall).
Atrypa(?) gibbosa Hall.
Atrypa reticularis Linneaus.
*_Atrypina clintoni_ Hall and Clarke.
Atrypina disparilis (Hall).
*_Avicula?? ferruginea_ Conrad.
Beyrichia lata (Vanuxem).
Bollia lata Jones.
Bucanella trilobata (Conrad).
Bucania bellapuncta Hall.
Bucania stigmosa Hall.
Buthotrephis gracilis (Hall).
Buthotrephis gracilis crassa Hall.
Buthotrephis gracilis intermedia Hall.
Buthotrephis impudica Hall.
Buthotrephis palmata Hall.
Buthotrephis ramosa Hall.
Calymene clintoni (Vanuxem).
Camarotœchia equiradiata (Hall).
Camarotœchia neglecta (Hall).
*_Calymenella rostrata_ (Vogdes).
Cannapora junciformis Hall.
Chasmatopora angulata Hall,
*_Climacograptus scalaris annulatus_ Ruedemann.
*_Clintonella vagabunda_ Hall and Clarke.
*_Clorinda areyi_ (Hall and Clarke).
Cœlospira hemispherica (Sowerby).
Cœlospira plicatula (Hall).
*_Conchidium georgiæ_ Hall and Clarke.
*_Ctenodonta clintonensis_ (Foerste).
Ctenodonta curta (Hall).
*_Ctenodonta diminuens_ (Simpson).
Ctenodonta? lata (Hall).
Ctenodonta mactriformis (Hall).
*_Ctenodonta sinuosa_ (Simpson).
*_Ctenodonta subtrigona_ (Simpson).
*_Ctenopleuron nerepisense_ Matthew.
Cuneamya alveata Whitfield and Hovey.
Cyrtia meta (Hall).
Cyrtodonta? alata (Hall).
Dalmanella elegantula (Dalman).
Diamesopora? tubulosa (Hall).
*_Diaphorostoma niagarense clintonense_ (Foerste).
Discosorus conoideus Hall.
*_Encrinurus americanus_ Vogdes.
Encrinurus ornatus (Hall and Whitfield).
*_Eurypterus_ (_Dolichopterus?_) _prominens_ Hall.
Favosites favosideus (Hall).
Fenestella tenuis Hall.
Fungispongia irregularis Ringueberg.
Glyptocrinus plumosus Hall.
Holopea fragilis (Hall).
Holopea obsoleta (Hall).
*_Holopea obsoleta elevata_ Foerste.
Hormotoma subulata (Conrad).
Hyattidina congesta (Conrad).
Ichnophycus tridactylus Hall.
Ichthyocrinus? clintonensis Hall.
Kionoceras cancellatum (Hall).
Leperditia pennsylvanica Jones.
Leptodesma rhomboidea (Hall).
Lingula acutirostris Hall.
Lingula clintoni Vanuxem.
Lingula oblata Hall.
Lingula (_Palæoglossa_) _perovata_ (Hall).
Lingula subelliptica D'Orbigny.
Lingula tæniola Hall and Clarke.
Modiolopsis subalatus Hall.
Monograptus clintonensis (Hall).
*_Monograptus priodon chapmanensis_ Ruedemann.
Nucleospira pisiformis Hall.
Oncoceras subrectum Hall.
Orthis(?) tenuidens Hall.
Orthis(?) trinucleus Hall.
Orthoceras virgulatum Hall.
Orthodesma curtum (Hall).
Pachydictya crassa (Hall).
Palæophycus striatum Hall.
Pentamerus oblongus Hall.
Pentamerus ovalis Hall.
Peronosporites globosus Loomis.
Peronosporites minutus Loomis.
Peronosporites ramosus Loomis.
Phænopora constellata Hall.
Phacops trisulcatus Hall.
Pisocrinus globosus (Ringueberg).
Pisocrinus pyriformis (Ringueberg).
Plectambonites transversalis (Wahlenberg).
*_Plectambonites transversalis alabamensis_ Foerste.
Pterinea emacerata (Conrad).
*_Ptilodictya obliqua_ (Ringueberg).
*_Ptilograptus hartnageli_ Ruedemann.
Pyrenomeus cuneatus Hall.
Retiolites geinitzianus venosus (Hall).
Rhinopora? tubulosa Hall.
Rhipidomella circulus Hall.
*_Rhipidomella subcircula_ (Simpson).
Rhynchonella(?) bidens Hall.
*_Rhynchonella(?) decemplicata_ (Sowerby).
Rhynchonella emacerata (Hall).
*_Rhynchonella lævis_ (Simpson).
Rusophycus biloba (Vanuxem).
Rusophycus clavatum Hall.
Rusophycus pudicum Hall.
Rusophycus subangulatum (Hall).
*_Schizophoria senecta_ Hall and Clarke.
Stricklandinia canadensis (Billings).
Spirifer (_Eospirifer_) _radiatus_ (Sowerby).
Stropheodonta corrugata (Conrad).
*_Stropheodonta(?) corrugata pleuristriata_ (Foerste).
Strophonella(?) patenta Hall.
Strophostylus cancellatus (Hall).
Strophostylus ventricosus (Hall).
Tentaculites minutus Hall.
Zaphrentis bilateralis (Hall).
Zaphrentis marcoui Edwards and Haime.

UPPER CLINTON OF NEW YORK, AND APPALACHIAN AND OHIO VALLEYS.

(Rochester shale=R.; Osgood limestone=O.; Dayton limestone=D. Irondequoit limestone=I.; Upper Clinton of eastern New York, Pennsylvania, and Maryland=Uc.)

Acanthoclema asperum Bassler. (R., O.)
Acanthograptus walkeri (Spencer). (R.)
Æchmina abnormis Ulrich. (R.)
Æchmina spinosa (Hall). (R., Uc.)
Allocystites hammelli Miller. (O.)
Allonema waldronense Ulrich and Bassler. (R.)
Amphicoelia orbiculoides (Grabau). (R.)
Anastrophia brevirostris (Sowerby?) (Hall). (R.)
Anastrophia interplicata (Hall). (R., I.)
Apiocystites elegans Hall. (R.)
Arctinurus boltoni (Bigsby). (R.)
Arctinurus nereus (Hall). (R.)
Asaphocrinus incisus (Ringueberg). (R.)
Asaphocrinus ornatus (Hall). (R.)
Ascodictyon siluriense Vine. (R.)
Atrypa nodostriata Hall. (R., I.)
Atrypa reticularis Linnæus .(R., O., I., Uc.)
Atrypa rugosa Hall. (R.)
Atrypina disparilis (Hall). (R.)
Avicula undosa Ringueberg. (R.)
Batostomella granulifera (Hall). (R., O., Uc.)
Berenicea consimilis (Lonsdale). (R., O.)
Bilobites acutilobus (Ringueberg). (R.)
Bilobites bilobus (Linnæus). (R., I.)
Bumastus ioxus Hall. (R.)
Buthotrephis gregaria Ringueberg. (R.)
Bythocypris punctulata niagarensis Ulrich. (R.)
Bythopora spinulosa (Hall). (R.)
Cactograptus crassus Ruedemann. (Uc.)
Calceocrinus bidentatus Ringueberg. (R.)
Callocystites canadensis (Billings). (R.)
Callocystites jewetti Hall. (R.)
Calymene niagarensis Hall. (R., O., Uc., I.)
Calymenella nasuta (Ulrich). (O.)
Camarotœchia indianensis (Hall). (O.)
Camarotœchia neglecta (Hall). (R., O.)
Camarotœchia oblusiplicata (Hall). (R.)
Caryocrinites ellipticus (Miller and Gurley). (O.)
Caryocrinites hammelli (Miller and Gurley). (O.)
Caryocrinites indianensis (Miller). (O.)
Caryocrinites ornatus Say. (R., O., I.)
Ceramopora imbricata Hall. (R., O.)
Ceramopora niagarensis Bassler. (R., O.)
Ceramoporella orbiculata (Ringueberg). (R.)
Ceramoporella reticulata (Spencer). (R.)
Ceratiocaris deweyi (Hall). (R.)
Chasmatopora asperatostriata (Hall). (R., O.)
Cheirurus niagarensis (Hall). (R.)
Chilotrypa ostiolata (Hall). (R., O., Uc., I.)
Chonetes cornutus (Hall). (Uc.)
Cladopora seriata Hall. (R.)
Clathropora alcicornis Hall. (R.)
Clathropora frondosa Hall. (R.)
Clathropora frondosa intermedia (Nicholson and Hinde). (R.)
Clorinda fornicata (Hall). (I.)
Closterocrinus elongatus Hall. (I.)
Cœloclema cavernosa Bassler. (R., O.)
Conularia bifurca Ringueberg. (R.)
Conularia laqueata Conrad. (R.)
Conularia longa Hall. (R.)
Conularia multipuncta Ringueberg. (R.)
Conularia niagarensis Hall. (R.)
Conularia quadrisulcata Hall.
Conularia transversa Ringueberg. (R.)
Cornulites bellistriatus Hall. (R.)
Cornulites clintoni Hall. (I., Uc.)
Cornulites contractus Ringueberg. (R.)
Cornulites nodosus Ringueberg. (R.)
Corynotrypa dissimilis (Vine). (R., O.)
Corynotrypa elongata (Vine). (R.)
Crania dentata Ringueberg. (R.)
Crania gracilis Ringueberg. (R.)
Ctenobolbina punctata Ulrich. (R.)
Ctenodonta elliptica (Hall). (Uc.)
Cyclograptus rotadendatus Spencer. (R.)
Cyrtia exporrecta (Wahlenberg). (O.)
Cyrtia myrtia (Billings). (O.)
Cyrtina pyramidalis (Hall). (R.)
Cyrtoceras cinctutum Foerste. (O.)
Cyrtoceras subcancellatum Hall. (R.)
Dalmanella elegantula (Dalman). (R., O., I., Uc.)
Dalmanites limulurus (Green). (R., O., I., Uc.)
Dawsonoceras annulatum (Sowerby). (R.)
Deiphon forbesi Barrande. (R.)
Deltacrinus halli (Ringueberg). (R.)
Deltacrinus typus (Ringueberg). (R.)
Dendrocrinus celsus Ringueberg. (R.)
Dendrocrinus longidactylus Hall. (R.)
Dendrograptus rectus Ruedemann. (Uc.)
Diamesopora dichotoma Hall. (R.)
Diaphorostoma cliftonense Foerste. (O.)
Diaphorostoma hemisphericum (Hall). (R.)
Diaphorostoma niagarense Hall. (R., O., Uc.)
Dictyonella corallifera Hall. (R.)
Dictyonema arcyi Gurley. (R.)
Dictyonema gracile Hall. (R.)
Dictyonema polymorphum Gurley. (R.)
Dictyonema retiforme (Hall). (R.)
Dictyonema subretiforme (Spencer). (R.)
Dimerocrinus aculeatus (Hall). (R.)
Dimerocrinus brachiatus (Hall). (R.)
Dimerocrinus canaliculatus (Hall). (R.)
Dimerocrinus lilliformis (Hall). (R.)
Diploclema sparsum (Hall). (R.)
Diploclema sparsum argutum Bassler. (R.)
Diplotrypa walkeri Bassler. (R.)
Duncanella borealis Nicholson. (O.)
Enterolasma caliculum (Hall). (R., O.)
Eridotrypa nodulosa Bassler. (R.)
Eridotrypa similis Bassler. (R.)
Eridotrypa solida (Hall). (R., Uc.)
Eridotrypa spinosa (Hall). (R.)
Eridotrypa striata (Hall). (R., O.)
Eucalyptocrinus cælatus (Hall). (R.)
Eucalyptocrinus cælatus levis Grabau and Shimer. (R.)
Eucheirocrinus chrysalis (Hall). (R.)
Eucheirocrinus radiculus (Ringueberg). (R.)
Eugasterella concinna (Ringueberg). (R.)
Favosites constrictus (Hall). (R.)
Favosites cristatus Edwards and Haime. (O.)
Favosites forbesi Edwards and Haime. (O.)
Favosites hisingeri Edwards and Haime. (R.)
Favosites pyriformis (Hall). (R.)
Fenestella cribrosa Hall. (R.)
Fenestella elegans Hall. (R.)
Fistulipora crustula Bassler. (R.)
Fistulipora laminata (Hall). (R.)

Fistulipora lockportensis Bassler. (R.)
Fistulipora tuberculosa (Hall). (R.)
Gazacrinus immaturus (Hall). (R.)
Goldius niagarensis (Hall). (L., R.)
Gomphocystites indianensis Miller. (O.)
Hallopora clausa (Bassler). (R., O.)
Hallopora elegantula (Hall). (R., O., Uc., I.)
Hallopora magnopora (Foerste). (R.)
Hemicystites parasiticus Hall. (R.)
Holocystites adipatus Miller. (O.)
Holocystites affinis Miller and Faber. (O.)
Holocystites amplus Miller. (O.)
Holocystites asper Miller and Gurley. (O.)
Holocystites baculus Miller. (O.)
Holocystites benedicti Miller. (O.)
Holocystites brauni Miller. (O.)
Holocystites canneus Miller. (O.)
Holocystites colletti Miller. (O.)
Holocystites commodus Miller. (O.)
Holocystites dyeri Miller. (O.)
Holocystites elegans Miller. (O.)
Holocystites faberi Miller. (O.)
Holocystites globosus Miller. (O.)
Holocystites gorbyi Miller. (O.)
Holocystites gyrinus Miller and Gurley. (O.)
Holocystites indianensis Miller. (O.)
Holocystites madisonensis Miller. (O.)
Holocystites ornatissimus Miller. (O.)
Holocystites ornatus Miller. (O.)
Holocystites papulosus Miller. (O.)
Holocystites parvulus Miller. (O.)
Holocystites perlongus Miller. (O.)
Holocystites plenus Miller. (O.)
Holocystites rotundas Miller. (O.)
Holocystites scitulus Miller. (O.)
Holocystites spangleri Miller. (O.)
Holocystites sphæroidalis Miller and Gurley. (O.)
Holocystites splendens Miller and Gurley. (O.)
Holocystites subovatus Miller. (O.)
Holocystites subrotundus Miller. (O.)
Holocystites tumidus Miller. (O.)
Holocystites turbinatus Miller. (O.)
Holocystites ventricosus Miller. (O.)
Holocystites wetherbyi Miller. (O.)
Holocystites wykoffi Miller (O.)
Homalonotus delphinocephalus (Green). (R., Uc.)
Homocrinus cylindricus Hall. (R.)
Homocrinus parvus Hall. (R.)
Homœospira apriniformis Hall. (R.)
Hormotoma subulata (Conrad). (R., Uc.)
Hyolithes cliftonensis Foerste. (O.)
Hyolithes subimbricatus Ringueberg. (R.)
Ichthyocrinus lævis Conrad. (R.)
Idiotrypa punctata (Hall). (R., O.)
Inocaulis plumulosus Hall. (R.)
Klœdenella symmetrica (Hall). (R., Uc.)
Labechia delicatula Parks. (O.)
Lecanocrinus macropetalus Hall. (R.)
Lecanocrinus puteolus Ringueberg. (R.)
Lecanocrinus solidus Ringueberg. (R.)
Leiopteria subplana (Hall). (R.)
Lepidocoleus sarlei Clarke. (R.)
Leptæna rhomboidalis (Wilckens). (R., O., Uc.)
Lichenalia concentrica Hall. (R., O.)
Lingula bicarinata Ringueberg. (R.)
Lingula lamellata Hall. (R.)
Lioclema asperum (Hall). (R., O., Uc.)
Lioclema circinctum Bassler. (R.)
Lioclema explanatum Bassler. (R., O.)
Lioclema globulare Bassler. (R.)
Lioclema maccombi Bassler. (R.)
Lioclema multiporum Bassler. (R., O.)
Lioclema ramolosum Bassler. (R.)
Loculipora ambugua precursor Bassler. (R., O.)
Loculipora ulrichi Bassler. (R.)
Lyriocrinus dactylus (Hall). (R.)
Macrostylocrinus fusibrachiatus Ringueberg. (R.)
Macrostylocrinus ornatus Hall. (R.)
Mariacrinus warreni Ringueberg. (R.)
Meekopora foliacea (Hall). (R.)
Mesopalæaster bellulus (Billings). (R.)
Mesotrypa nummiformis (Hall). (R., O.)
Mitoclema sarlei Bassler. (R.)
Modiolopsis ovata Hall. (Uc.)
Modiolopsis subcarinata Hall.
Monograptus clintonensis (Hall). (Uc.)
Monotrypa benjamini Bassler. (R., O.)
Monotrypa osgoodensis Bassler. (R., O.)
Monotrypa pediculata Bassler. (R., O.)
Myelodactylus brachiatus Hall. (R.)
Myelodactylus convolutus Hall. (R.)
Mytilarca mytilformis (Hall). (Uc.)
Nematopora minuta (Hall). (R.)
Nicholsonella florida (Hall). (R., O., Uc.)
Nicholsonella ringuebergi Bassler. (R.)
Nucleospira pisiformis Hall. (O., Uc.)
Octonaria curta Ulrich. (R.)
Orbignyella expansa (Ringueberg). (R.)
Orbignyella magnopora Bassler. (R.)
Orthis flabellites Foerste. (R., O., I.)
Orthis interplicata Foerste. (O.)
Orthis(?) punctostriata Hall. (R.)
Orthoceras abruptum Hall.
Orthoceras clavatum Hall. (Uc.)
Orthostrophia (Schizoramma) fasciata (Hall). (O., R.)
Orthostrophia (Schizoramma) fissistriata (Foerste). (O.)
Pachydictya crassa (Hall). (R., O., Uc.)
Palæaster niagarensis Hall. (R.)
Palæocyclus rotuloides Hall. (Uc.)
Palæodictyota anastomotica (Ringueberg). (R.)
Palæodictyota bella (Hall and Whitfield). (R.)
Palæodictyota bella recta Ruedemann. (Uc.)
Palæodictyota clintonensis Ruedemann. (Uc.)
Pentamerella(?) compressa Ringueberg. (R.)
Phænopora ensiformis Hall. (R., O.)
Phænopora fimbriata canadensis Bassler. (R., Uc.)
Pholidops squamiformis Hall. (R.)
Pisocrinus gemmiformis Miller. (O.)
Platyceras angulatum (Hall). (R.)
Platyceras laciniosum Ringueberg. (R.)
Platyceras? membranaceum Ringueberg. (R.)
Platyceras niagarense (Hall). (R.)
Platyceras proclive Ringueberg. (R.)
Platyceras pronum Foerste. (O.)
Platycrinus corporiculus Ringueberg. (R.)
Plectambonites transversalis (Wahlenberg). (R., O., Uc.)
Polypora incepta Hall. (R.)
Proetus corycæus (Conrad). (R.)
Proetus stokesi (Murchison?) Hall. (R.)
Protaster stellifer Ringueberg. (R.)
Pseudohornera diffusa (Hall). (R.)
Pseudohornera niagarensis (Hall). (R.)
Pterinea emacerata (Conrad). (R., Uc.)

Pterinea undata (Hall). (R.)
Pterinopecten? rhomboideus (Hall). (R.)
Ptiloporella nervata (Nicholson). (R., O.)
Pycnosaccus calyculus (Hall). (R.)
Rafinesquina obscura (Hall). (Uc.)
Rhinopora curvata Ringueberg. (R.)
Rhipidomella hybrida (Sowerby). (R., O., I.)
Rhombotrypa spinulifera Bassler. (O., R.)
Rhopalonaria attenuata Ulrich and Bassler. (R.)
Rhynchonella(?) bidentata (Hisinger). (R.)
Rhynchotreta cuneata americana (Hall). (R., O., I.)
Rhynchotreta robusta (Hall). (I.)
Scenidium pyramidale Hall. (R.)
Schuchertella subplana (Conrad). (R., O., Uc.)
Semicoscinium tenuiceps (Hall). (R., O.)
Spatiopora maculata (Hall). (R.)
Spirifer (*Eospirifer*) *asperatus* (Ringueberg). (R.)
Spirifer (*Delthyris*) *crispus* (Hisinger).
Spirifer (*Eospirifer*) *eudora* (Hall). (O.)
Spirifer (*Eospirifer*) *niagarensis* (Conrad). (R., O.)
Spirifer (*Eospirifer*) *radiatus* (Sowerby). (O., R.)
Spirifer (*Delthyris*) *sulcatus* (Hisinger). (R.)
Squamaster echinatus Ringueberg. (R.)
Stephanocrinus angulatus Conrad. (R.)
Stephanocrinus cornetti Miller. (O.)
Stephnaocrinus deformis Rowley. (O.)
Stephanocrinus elongatus Miller. (O.)
Stephanocrinus gemmiformis Hall. (R., O., I.)
Stephanocrinus hammelli Miller. (O.)
Stephanocrinus obpyramidalis Miller. (O.)
Stephanocrinus osgoodensis Miller. (O.)
Stephanocrinus quinquepartitus Rowley. (O.)
Stictotrypa punctipora (Hall). (R.)
Stigmatella globata Bassler. (R.)
Striatopora flexuosa Hall. (R., O.)
Strombodes mamillaris wilmingtonensis Foerste. (D.)
Stropheodonta prisca Hall. (Uc.)
Stropheodonta (*Brachyprion*) *profunda* (Hall). (I., R.)
Strophomena orthididea (Hall). (Uc.).
Strophonella striata (Hall). (R.)
Tæniodictya shucherti Bassler. (R.)
Tentaculites niagarensis Hall. (R.)
Thamniscus dichotomus (Hall). (R.)
Thecia major Rominger. (O.)
Trematocystis hammelli (Miller). (O.)
Trematocystis subglobosus (Miller). (O.)
Trematopora spiculata Miller. (R., O.)
Trematopora tuberculosa Hall. (O., R.)
Trematopora whitfieldi Ulrich. (R.)
Trematospira camura Hall. (R.)
Triplecia (*Cliftonia*) *tenax* Foerste. (O.)
Tuberculopora inflata Ringueberg. (R.)
Turrilepas gracillissimus (Ringueberg). (R.)
Vinella(?) multiradiata Ulrich and Bassler. (R.)
Vinella radiciformis (Vine). (R.)
Whitfieldella cylindrica (Hall). (I.)
Whitfieldella intermedia (Hall). (I.)
Whitfieldella navformis (Hall). (I.)
Whitfieldella nitida (Hall). (R., I.)
Whitfieldella nitida oblata (Hall). (R. I.)
Whitfieldella quadrangularis Foerste. (O.)

CLINTON OF EASTERN KENTUCKY.

(Waco=W.; West Union=Wu; Crab Orchard=C.; Alger=A.; Estill=E.; Indian Fields=I.)

Atrypa reticularis Linnaeus.
Atrypa rugosa Hall. (Wn.)
Beyrichia lata triplicata Foerste. (C., E.)
Calostylis spongiosa Foerste. (W.)
Calymene clintoni (Vanuxem). (C.)
Calymene niagarensis Hall. (W.)
Camarotœchia acinus subrhomboideus Foerste. (Wu.)
Camarotœchia congruens Foerste. (C., Wu.)
Camarotœchia pisa (Hall and Whitfield). (Wu.)
Chonetes vetustus Foerste.
Chonophyllum solitarium Foerste. (W.
Clathropora frondosa Hall. (Wu.)
Corynotrypa dissimilis (Vine). (W.)
Cyathophyllum densiseptatum Foerste. (W.)
Cyathophyllum sedentarium Foerste. (W.)
Cystiphyllum spinulosum Foerste. (W.)
Dalmanella elegantula (Dalman). (W.)
Dalmanites limulurus brevicaudatus Foerste. (Wu.)
Diaphorostoma cliftonense Foerste. (Wu.)
Diaphorostoma niagarense (Hall).
Encrinnus ornatus Hall and Whitfield. (W.)
Favosites declinatus Foerste. (W.).
Favosites favosus Goldfuss. (W.)
Favosites hisingeri aplata Foerste. (W.)
Halysites catenularia Linnæus. (W.)
Heliolites spongia Foerste. (W.)
Heliolites subtubulata distans Foerste. (W.)
Heliolites subtubulata nucella Foerste. (W.)
Illænus depressus Foerste. (Wu.)
Isochilina panolensis Foerste. (W.)
Lindströmia lingulifera Foerste. (W.)
Lyellia eminula Foerste. (W.)
Meekopora bassleri Foerste. (W.)
Pholidops ovalis Hall. (W.)
Platystrophia reversata Foerste.
Platystrophia unionensis Bassler. (Wu.)
Polyorophe radicula Foerste. (W.)
Orthis flabellites Foerste. (W.)
Rhipidomella magnicardinalis Foerste. (Wu.)
Schuchertella conferta Foerste. (Wu.)
Spirifer (*Eospirifer*) *eudora* (Hall). (Wu.)
Spirifer (*Eospirifer*) *harinensis* (Foerste). (Wu.)
Spirifer (*Delthyris*) *nanus* (Foerste). (Wu.)
Spirifer (*Eospirifer*) *radiatus obsoletus* (Foerste). (Wu.)
Spirifer (*Eospirifer?*) *repertus* (Foerste). (Wu.)
Stricklandinia norwoodi Foerste. (O.)
Strombodes granulosus (Foerste). (W.)
Strombodes mamillaris distans (Foerste). (W.)
Stropheodonta mundula Foerste. (C.)
Stropheodonta (*Brachyprion*) *planus* Foerste. (Wu.)
Syringolites huronensis (Hinde). (W.)
Trematospira camura pauciplicata Foerste. (Wu.)
Whitfieldella quadrangularis Foerste. (I.)
Whitfieldella subquadrata Foerste. (I.)
Zaphrentis charaxata Foerste. (W.)
Zaphrentis intertexta Foerste. (W.)
Zaphrentis intertexta irvinensis Foerste. (W.)
Zaphrentis intertexta juvenis Foerste. (W.)

"NIAGARAN DOLOMITE" (ROCHESTER) HAMILTON, ONTARIO.

(Regarded as of Lockport age by Schuchert and Parks but the true Lockport dolomite overlies these beds in this section at Hamilton. As the evidence for the Rochester age of the Dictyonema chert beds at Hamilton has not been published, the species have been cited in the bibliography simply as "Niagaran dolomite.")

Acanthograptus granti Spencer.
Acanthograptus multispinus Gurley.

Acanthograptus pulcher Spencer.
Arctinurus boltoni (Bigsby).
Astroconia granti Sollas.
Astylospongia præmorsa Goldfuss.
Atrypa reticularis (Linnaeus).
Bumastus ioxus Hall.
Callograptus minutus Spencer.
Callograptus minutus altus Gurley.
Callograptus multicaulis Spencer.
Callograptus niagarensis Spencer.
Callograptus strictus Gurley.
Calyptograptus cyathiformis Spencer.
Calyptograptus micronematodes Spencer.
Calyptograptus? radiatus Spencer.
Camarotœchia neglecta Hall.
Caunopora mirabilis Spencer.
Ceramopora imbricata Hall.
Ceramoporella reticulata (Spencer).
Conularia magnifica Spencer.
Conularia rugosa Spencer.
Conularia wilkinsi Spencer.
Cornulites clintoni Hall.
Crania anna Spencer.
Cyclograptus rotadentatus Spencer.
Dalmanella elegantula (Dalman).
Dalmanites limulurus Green.
Dendrograptus dawsoni Spencer.
Dendrograptus frondosus Spencer.
Dendrograptus ontarioensis Bassler.
Dendrograptus phainotheca Gurley.
Dendrograptus prægracilis Spencer.
Dendrograptus? problematicus (Spencer).
Dendrograptus ramosus Spencer.
Dendrograptus spinosus Spencer.
Diamesopora dichotoma Hall.
Dictyonella corallifera Hall.
Dictyonella reticulata Hall.
Dictyonema crassibasale Gurley.
Dictyonema desmoides Gurley.
Dictyonema expansum Spencer.
Dictyonema filiramus Gurley.
Dictyonema parallelum Gurley.
Dictyonema percrassum Gurley.
Dictyonema retiforme Hall.
Dictyonema spenceri Gurley.
Dictyonema stenactinotum Gurley.
Dictyonema tenellum Spencer.
Enterolasma caliculus (Hall).
Fenestella elegans Hall.
Inocaulis cervicornis Spencer.
Inocaulis congregatus Gurley.
Inocaulis diffusus Spencer.
Inocaulis diffusus crassiramus Gurley.
Inocaulis granti (Dawson).
Inocaulis phycoides Spencer.
Inocaulis plumulosus Hall.
Inocaulis ramulosus Spencer.
Inocaulis? strictus Gurley.
Inocaulis? thallosus Gurley.
Leptæna rhomboidalis (Wilckens).
Lichenalia concentrica Hall.
Lingula ingens Spencer.
Lingula lamellata Hall.
Lingulops granti Hall and Clarke.
Lituites niagarensis Spencer.
Mesotrypa nummiformis (Hall).
Nicholsonella florida (Hall).
Odontocaulis obpyriformis Gurley.
Odontocaulis occidentalis Gurley.
Odontocaulis granti (Spencer).
Orthoceras bartonensis Spencer.
Pachydictya crassa (Hall).
Pholidops squamiformis Hall.
Plectambonites transversalis (Wahlenberg).
Pleurotomaria clipeiformis Spencer.
Polypora albionensis Spencer.
Protarea walkeri (Spencer).
Pseudohornera diffusa (Hall).
Pseudohornera niagarensis (Hall).
Pterinea emacerata (Conrad).
Pterygotus canadensis Dawson.
Ptilograptus foliaceus Spencer.
Rhipidomella hybrida (Sowerby).
Rhizograptus bulbosus Spencer.
Schizotreta tenuilamellata (Hall).
Schuchertella subplana (Conrad).
Semicoscinium tenuiceps (Hall).
Spirifer (*Eospirifer*) *niagarensis* (Hall).
Spirifer (*Eospirifer*) *radiatus* (Sowerby).
Spirifer (*Delthyris*) *sulcatus* (Hisinger).
Stricklandinia chapmani Hall and Clarke.
Stropheodonta profunda (Hall).
Strophonella patenta (Hall).
Thamnograptus bartonensis Spencer.
Thamnograptus(?) *multiformis* Spencer.
Whitfieldella nitida oblata (Hall).

ANTICOSTIAN, ISLAND OF ANTICOSTI, QUEBEC.

(Becsie River=B.; Gun River=G.; Jupiter Rive- J.; Chicotte=C.).

Actinoceras infelix (Billings). (B., G., J.)
Alveolites labechei Edwards and Haime. (J.)
Athyris(?) *tumidula* Billings. (G., J.)
Atrypa marginalis Dalman. (B., C.)
Atrypa reticularis Linnaeus. (G., J., C.)
Bellerophon dilatatus (Sowerby?) Billings. (G., J.)
Beyrichia diffusa Jones. (J.)
Beyrichia venusta Billings. (J.)
Bilobites bilobus (Linnaeus). (G., J.)
Bumastus orbicaudatus (Billings). (B., G.)
Calymene niagarensis Hall. (B., G., J.)
Camarotœchia argentea (Billings). (J.)
Camarotœchia decemplicata (Sowerby). (G.)
Camarotœchia fringilla (Billings). (G.)
Camarotœchia glacialis (Billings). (G., J.)
Camarotœchia neglecta (Hall). (B., G.)
Camarotœchia nutrix (Billings). (G., J.)
Camarotœchia pyrrha (Billings). (G.)
Camarotœchia vicina (Billings). (C.)
Cheirurus nuperus Billings. (G., J., C.)
Chilotrypa circe Billings. (J.)
Chonetes primigenius Twenhofel. (G., J.)
Chonophyllum (*Craterophyllum*) *canadense* (Billings). (J., C.)
Clathrodictyon vesiculosum Nicholson and Murie. (B., G., J., C.)
Cœlospira hemispherica (Sowerby). (G., J., C.)
Cœlospira planoconvexa (Hall). (B., G.)
Cœnites lunatus (Nicholson and Hinde). (J.)
Conocardium elegantulum Billings. (J., C.)
Corynotrypa dissimilis (Vine). (G.)
Corynotrypa elongata (Vine). (G.)
Cyathopyllum anticostiense Billings. (J., C.)

Cyathophyllum euryone Billings. (G., C.)
Cyathophyllum wahlenbergi Billings. (B., C.)
Cyclonema bellulum Billings. (G.)
Cyclonema commune Billings. (J., C.)
Cyclonema decorum Billings. (C.)
Cyclonema percingulatum Billings. (J.)
Cyclonema varians Billings. (C.)
Cyrtia myrtia (Billings). (C.)
Cystiphyllum niagarensis (Hall). (G., J.)
Dalmanella elegantula media (Shaler). (J., C.)
Diaphorostoma humile (Billings). (G., J., C.)
Diaphorostoma niagarensis (Hall). (G., J.)
Dionide(?) perplexa Billings. (J.)
Diphyphyllum cæspitosum (Hall). (B., G.)
Diploclema sparsum (Hall). (G., J.)
Encrinurus elegantulus Billings. (J.)
Eoharpes consuetus (Billings. (C.)
Eurychilina billingsi (Jones). (G., J.)
Favosites favosus Goldfuss. (J.)
Favosites forbesi Edwards and Haime. (B., G., J.)
Favosites hisingeri Edwards and Haime. (J.)
Glossoceras desideratum Billings. (J.)
Goldius insularis (Billings). (C.)
Halysites catenularia Linnaeus. (B., G., J.)
Heliolites interstinctus (Linnaeus). (J.)
Heliolites subtubulatus (McCoy). (G., J.)
Helopora armata Billings. (J.)
Helopora bellula Billings. (G., J.)
Helopora concava Billings. (B., G., J.)
Helopora formosa Billings. (B., G., J.)
Helopora lineopora Billings. (B., G.)
Hindella prinstana (Billings). (B.)
Hindella umbonata (Billings). (B., G.)
Hormotoma? aculeata (Billings). (G., J.)
Hormotoma funata (Billings). (G., J.)
Huronia persiphonata (Billings). (G., J.)
Huronia vertebralis Stokes. (J., C.)
Hyattidina congesta junia (Billings). (G.)
Illænus grandis Billings. (B., G., J., C.)
Kionoceras bellatulum (Billings). (G., J.)
Leperditia anticostiana (Jones). (G., J.)
Leperditia frontalis Jones. (J.)
Leperditia selwyni Jones. (J.)
Leptæna julia (Billings). (J.)
Leptæna rhomboidalis (Wilckens). (G., J., C.)
Lichas canadensis Billings. (G.)
Lioclema variporum (Billings). (J.)
Lissatrypa atheroidea Twenhofel. (J.)
Lyellia affinis (Billings). (B., G., J., C.)
Lyellia americana Edwards and Haime. (C.)
Lyellia exigua (Billings). (B., G., J., C.)
Monograptus clintonensis Hall. (J.)
Murchisonia? turricula Billings. (J.)
Mytilarca nitida (Billings). (J.)
Nidulites gregarius (Billings). (G.)
Nidulites intermedius (Billings). (G.)
Oncoceras amator Billings. (C.)
Oncoceras futile Billings. (J.)
Orthis davidsoni Verneuil. (B., G.)
Orthis flabellites Foerste. (B., G., J.)
Orthoceras bucklandi Billings. (C.)
Orthoceras medon Billings. (C.)
Orthoceras pileolum Billings. (C.)
Orthoceras raptor Billings. (J.)
Pachydictya crassa (Hall). (B., G., J., C.)
Paleofavosites aspera (D'Orbigny). (B., G., J., C.)
Parastrophia lenticularis (Billings). (B.)
Parastrophia ops (Billings). (C.)
Pasceolus halli Billings. (B.)
Pentamerus oblongus Sowerby. (G., J., C.)
Phacopidella orestes (Billings). (G., J.)
Phænopora ensiformis Hall. (B.)
Phænopora excellens (Billings). (G.)
Phænopora superba (Billings). (B., G.)
Plasmopora petaliformis (Lonsdale). (J., C.)
Platystrophia regularis Shaler. (G.)
Plectambonites glaber Shaler.
Plectambonites transversalis (Wahlenberg). (G., J.)
Pleurotomaria cryptata Billings. (G., J.)
Pseudosphærexochus canadensis (Billings). (C.)
Pterinea curiosa Billings. (J.)
Pterinea emacerata (Conrad). (G.)
Pterinea striata (Billings). (G., J.)
Pterinea thisbe Billings. (G.)
Ptilodictya gladiola Billings. (B., J.)
Ptilodictya sulcata Billings. (J.)
Rhipidomella uberis (Billings). (B., G., J., C.)
Rhipdomella uberis rhynchonelliformis (Shaler). (B. G., J.)
Schuchertella alterniradiata (Shaler). (G.)
Schuchertella pecten (Roemer). (B., G., J.)
Spirifer (*Eospirifer*) *radiatus* (Sowerby). (J., C.)
Streptelasma? latusculum (Billings). (G., J.)
Streptelasma (*Petraia*) *pygmæum* (Billings). (G., J.)
Stricklandinia anticostiensis (Billings?).
Stricklandinia brevis (Billings). (G., J.)
Stricklandinia davidsoni Billings. (G., J., C.)
Stricklandinia lirata (Sowerby). (G., J.)
Stricklandinia melissa Billings. (J.)
Stricklandinia salteri Billings. (G., J.)
Strombodes diffluens Edwards and Haime. (G.)
Stropheodonta (*Brachyprion*) *anticostiensis* (Shaler). (G., J.)
Stropheodonta (*Brachyprion*) *leda* (Billings). (B., G., J.)
Stropheodonta (*Brachyprion*) *philomela* (Billings). (G., J.)
Strophomena(?) antiquata Sowerby. (G., J.)
Strophomena(?) semiovalis Shaler.
Strophonella (*Strophoprion*) *geniculata* (Shaler). (G., J.)
Syringopora verticillata Goldfuss. (G., J.)
Thamniscus striatopora (Billings). (J.)
Trematopora irregularis (Billings). (J.)
Triplecia insularis anticostiensis Twenhofel. (G., J.)
Vinella? multiradiata Ulrich and Bassler. (J.)
Vinella radiciformis (Vine). (G., J.)
Virgiana barrandei (Billings). (B.)
Whitfieldella(?) julia (Billings). (J.)
Whitfieldella lara (Billings). (G., J.)
Whitfieldella solitaria (Billings). (G., J.)
Zaphrentis patens Billings. (J.)
Zaphrentis stokesi Edwards and Haime. (B., G., J., C.)
Zygospira(?) mica (Billings). (J.)
Zygospira paupera Billings. (G., J.)

NIAGARAN (LAUREL) OF INDIANA, KENTUCKY, AND TENNESSEE.

Acacocrinus americana Wachsmuth and Springer.
Aethocystites sculptus Miller.
Allocrinus benedicti Miller.
Amplexus cinctutus Miller.
Anastrophia internascens (Hall).
Atrypa nodostriata Hall.

Atrypa reticularis Linnaeus.
Barrandeoceras canaliculatus (Miller).
Barrandeocrinus? indianensis (Miller and Gurley).
Callicrinus beachleri Wachsmuth and Springer.
Calymene niagarensis Hall.
Conocardium elrodi Miller.
Corydocephalus byrnesanus (Miller and Gurley).
Corydocephalus phlyctainoides (Green).
Cyphocrinus gorbyi Miller.
Cyrtoceras howardi Miller.
Cyrtoceras indianense Miller.
Cyrtoceras nashvillense Miller.
Dalmanella elegantula (Dalman).
Dawsonoceras annulatum (Sowerby).
Deltacrinus indianensis (Miller).
Emperocrinus indianensis Miller and Gurley.
Favosites spinigerus Hall.
Gazacrinus inornatus Miller.
Gazacrinus ventricosus Wachsmuth and Springer.
Gyroceras elrodi White.
Habrocrinus howardi (Miller).
Holocystites pustulosus Miller.
Indianocrinus punctatus Miller and Gurley.
Macrostylocrinus indianensis Miller and Gurley.
Mariacrinus aureatus Miller.
Mariacrinus? granulosus Miller.
Melocrinus æqualis Miller.
Melocrinus oblongus Wachsmuth and Springer.
Periechocrinus ornatus (Hall and Whitfield).
Periechocrinus umbrosus (Miller and Gurley).
Petalocrinus longus Bather.
Pisocrinus baccula Miller and Gurley.
Pisocrinus gemmiformis Miller.
Plasmopora follis Edwards and Haime.
Spirifer (*Delthyris*) *crispus simplex* (Hall).
Spirifer (*Eospirifer*) *radiatus* Sowerby.
Streptelasma spongiaxis Rominger.
Striatopora gorbyi Miller.
Stribalocystites gorbyi Miller.
Stribalocystites sphæroidalis Miller and Gurley.
Stribalocystites tumidus Miller.
Subulites benedicti Miller.
Uncinulus stricklandi (Sowerby).
Zophocrinus howardi Miller.

NIAGARAN (WALDRON) OF INDIANA, KENTUCKY, AND TENNESSEE.

Acacocrinus elrodi Wachsmuth and Springer.
Allonema waldronense Ulrich and Bassler.
Ampheristocrinus? calyx (Hall).
Ampheristocrinus typus Hall.
Amphicœlia leidyi Hall.
Anastrophia internascens Hall.
Arctinurus occidentalis (Hall).
Atrypa reticularis (Linnæus).
Atrypa reticularis newsomensis Foerste.
Atrypa reticularis niagarensis Nettelroth.
Ascodictyon siluriense Vine.
Astylospongia imbricato articulata (Roemer).
Astylospongia præmorsa (Goldfuss).
Astylospongia præmorsa pusilla Rauff.
Atrypina disparilis (Hall).
Aulopora precius Hall.
Baryphyllum fungulus White.
Batostomella granulifera (Hall).
Bellerophon tuber Hall.
Berenicea consimilis (Lonsdale).
Beyrichia granulosa Hall.
Beyrichia waldronensis Ulrich and Bassler.
Bilobites bilobus (Linnaeus).
Botryocrinus nucleus (Hall).
Botryocrinus polyx (Hall).
Bumastus armatus (Hall).
Bumastus ioxus Hall.
Buthotrephis gracilis crassa Hall.
Callopora?? cervicornis Hall.
Callopora?? diversa Hall.
Calymene niagarensis Hall.
Camarotœchia(?) *acinus* (Hall).
Camarotœchia(?) *indianensis* (Hall).
Camarotœchia neglecta (Hall).
Camarotœchia (*Stegerhynchus*) *whitei* (Hall).
Caryospongia juglans nuxmoschata (Hall).
Ceramopora? confluens Hall.
Ceramopora? explanata Hall.
Ceramopora? notha Hall.
Ceramopora? raripora Hall.
Ceratocephala fimbriata (Hall).
Chaunograptus novellus (Hall).
Cheirurus niagarensis (Hall).
Chilotrypa varia (Hall).
Chilotrypa variolata (Hall).
Chonetes novascoticus waldronensis Foerste.
Chonetes undulatus Hall.
Cladopora sarmentosa Hall.
Clorinda fornicata (Hall).
Coleolus spinulus Hall.
Conularia infrequens Hall.
Cornulites proprius Hall.
Corynotrypa dissimilis (Vine).
Corynotrypa elongata (Vine).
Crania setifera Hall.
Crania siluriana Hall.
Crania spinigera Hall.
Cyathocrinus? æmulus Hall.
Cyathocrinus? benedicti Miller.
Cycloceras amycus (Hall).
Cyphaspis christyi Hall.
Cypricardinia arata Hall.
Cypricardinia subovata Miller and Dyer.
Cyrtia myrtia (Billings).
Cyrtolites sinuosus Hall.
Dalmanella elegantula (Dalman).
Dalmanites bicornis (Hall).
Dalmanites halli Weller.
Dalmanites verrucosus (Hall).
Dawsonoceras annulatum (Sowerby).
Deltacrinus stigmatus (Hall).
Deltacrinus tunicatus (Hall).
Diamesopora infrequens (Hall).
Diamesopora osculum (Hall).
Diamesopora subimbricata (Hall).
Diaphorostoma niagarense (Hall).
Diaphorostoma niagarense multilineatum Calvin.
Diaphorostoma plebium (Hall).
Dictyonella reticulata Hall.
Dimerocrinus halli (Lyon).
Dimerocrinus inornatus (Hall).
Dimerocrinus occidentalis (Hall).
Dimerocrinus waldronensis (Miller and Dyer).
Duncanella borealis Nicholson.
Entomis waldronensis Ulrich.
Eridotrypa echinata (Hall).
Eucalyptocrinus crassus Hall.

Eucalyptocrinus ellipticus Miller.
Eucalyptocrinus elrodi Miller.
Eucalyptocrinus magnus Worthen.
Eucalyptocrinus ovalis Hall.
Eucalyptocrinus springeri Foerste.
Eucalyptocrinus tuberculatus Miller and Dyer.
Euomphalopterus alatus obsoletus Ulrich.
Favosites forbesi occidentalis (Hall).
Favosites spinigerus Hall.
Fenestella bellistriata Hall.
Fenestella parvulipora Hall.
Fenestella pertenuis Hall.
Fenestella prolixa Hall.
Fistulipora halli Rominger.
Fistulipora neglecta Rominger.
Fistulipora neglecta maculata (Hall).
Goniophora speciosa Hall.
Gypidula simplex Foerste.
Gyroceras abruptum Hall.
Hallopora elegantula (Hall).
Homalonotus delphinocephalus? Hall.
Homocrinus ancilla (Hall).
Homœospira evax Hall.
Hyolithes newsomensis Foerste.
Homœospira sobrina (Beecher and Clarke).
Ichthyocrinus subangularis Hall.
Inocaulis divaricatus Hall.
Ischadites subturbinatus Hall.
Kionoceras cancellatum (Hall).
Lampterocrinus parvus Hall.
Lecanocrinus pusillus (Hall).
Leperditia faba Hall.
Leptæna rhomboidalis (Wilckens).
Leptotrypa? sphærion (Hall).
Lingula gibbosa Hall.
Lioclema? exsul (Hall).
Loculipora ambigua (Hall).
Lyriocrinus melissa (Hall).
Macrostylocrinus fasciatus (Hall).
Macrostylocrinus granulosus (Hall).
Macrostylocrinus striatus Hall.
Mariacrinus carleyi (Hall).
Melocrinus obconicus Hall.
Meristina maria (Hall).
Meristina rectirostris Hall.
Metopolichas breviceps (Hall).
Mimulus waldronensis (Miller and Dyer).
Modiolopsis perlatus Hall.
Modiolopsis subalatus Hall.
Monotrypella? consimilis (Hall).
Myelodactylus gorbyi Miller.
Mytilarca acutirostra (Hall).
Mytilarca sigilla Hall.
Nautilus?? oceanus Hall.
Nematopora macropora (Hall).
Nematopora minuta (Hall).
Nucleospira pisiformis Hall.
Orthis benedicti Miller.
Orthis (?) subnodosa Hall.
Orthoceras simulator Hall.
Orthostrophia newsomensis Foerste.
Palæomanon bursa (Hall).
Paleschara? incrassata Hall.
Paleschara? offula Hall.
Periechocrinus whitfieldi (Hall).
Pholidops ovalis Hall.
Platycrinus siluricus Hall.
Plectambonites tennesseensis Foerste.
Plectambomites transversalis (Wahlenberg).
Polypora conferta (Hall).
Polypora punctostriata (Hall).
Polypora tantula (Hall).
Protokionoceras medulare (Hall).
Pseudohornera niagarensis (Hall).
Pterinea brisa Hall.
Pterinea nervata Foerste.
Pterinea newsomensis Foerste.
Ptilodictya angusta (Hall).
Receptaculites sacculus Hall.
Reticularia bicostata petila (Hall).
Rhipidomella hybrida (Sowerby).
Rhipidomella newsomensis Foerste.
Rhombopteria (*Newsomella*) *divaricata* Foerste.
Rhynchotreta cuneata americana (Hall).
Sagenocrinus americanus Springer.
Scenidium bassleri Foerste.
Schuchertella subplana (Hall).
Schuchertella tenuis (Hall).
Semicoscinium acmeum (Hall).
Spatiopora maculata (Hall).
Spirifer (*Delthyris*) *crispus* (Hisinger).
Spirifer (*Delthyris*) *crispus simplex* (Hall).
Spirifer (*Eospirifer*) *eudora* (Hall).
Spirifer (*Eospirifer*) *radiatus* (Sowerby).
Spirifer (*Delthyris*) *swallowensis* (Foerste).
Spirorbis? flexuosus Hall.
Spirorbis inornatus Hall.
Stephanocrinus gemmiformis Hall.
Stephanocrinus pentalobus (Hall).
Stephanocrinus pulchellus (Miller and Dyer).
Stephanocrinus tennesseensis Foerste.
Stictotrypa orbipora (Hall).
Stictotrypa similis (Hall).
Streptelasma radicans Hall.
Stropheodonta (*Brachyprion*) *newsomensis* Foerste.
Stropheodonta profunda (Hall).
Stropheodonta semifasciata Hall.
Stropheodonta striata (Hall).
Strophostylus amplus Rowley.
Strophostylus cyclostomus Hall.
Strophostylus cyclostomus disjunctus Hall.
Trematopora halli Ulrich.
Trematopora? singularis (Hall).
Trematopora spiculata Miller.
Trematopora whitfieldi Ulrich.
Trochoceras waldronense Hall.
Uncinulus stricklandi (Sowerby).
Vinella radiciformis (Vine).
Vinella radiciformis conferta Ulrich.
Whitfieldella nitia (Hall).
Zaphrentis celator Hall.
Zygospira(?) minima Hall.

NIAGARAN (LOUISVILLE) OF KENTUCKY AND INDIANA.

Alveolites fibrosus Davis.
Alveolites louisvillensis Davis.
Alveolites thoroldensis Parks.
Alveolites undosus Miller.
Amplexus shumardi (Edwards and Haime).
Anastrophia internascens Hall.
Anastrophia interplicata Hall.
Anisocrinus greenei (Miller and Gurley).
Anisophyllum? bilamellatum Hall.
Anisophyllum trifurcatum Hall.
Anisophyllum unilargum Hall.

Astræospongia meniscus (Roemer).
Atrypa calvini Nettelroth.
Atrypa marginalis Dalman.
Atrypa nodostriata Hall.
Atrypa reticularis niagarensis Nettelroth.
Atrypa rugosa Hall.
Aulopora precius Hall.
Aulopora pygmæa Davis.
Aulopora vanclevi Hall.
Blothrophyllum cinctosum Greene.
Blothrophyllum niagarense Davis.
Bumastus iorus Hall.
Calceola (*Rhizophyllum*) *attenuatus* (Lyon).
Calceola (*Rhizophyllum*) *corniculum*) (Lyon).
Camarotœchia(?) *acinus* (Hall).
Camarotœchia(?) *indianensis* (Hall).
Camarotœchia pisa (Hall and Whitfield).
Caryocrinites kentuckiensis (Miller and Gurley).
Chonophyllum? capax Hall.
Chonophyllum vadum Hall.
Cladopora aculeata Davis.
Cladopora complanata Davis.
Cladopora equisetalis Davis.
Cladopora laqueata Rominger.
Cladopora menis Davis.
Cladopora ordinata Davis.
Cladopora proboscidalis Davis.
Cladopora reticulata Hall.
Cladopora striata Davis.
Clathrodictyon drummondense Parks.
Clathrodictyon rectum Parks.
Clathrodictyon vesiculosum Nicholson and Murie.
Clorinda ventricosa Hall.
Cœlocaulus petila (Hall and Whitfield).
Cœnites crassus (Rominger).
Cœnites laminatus Hall.
Cœnites verticillatus (Winchell and Marcy).
Conchidium crassiplicata Hall and Clarke.
Conchidium exponens Hall and Clarke.
Conchidium knappi (Hall and Whitfield).
Conchidium littoni (Hall).
Conchidium nettelrothi Hall and Clarke.
Conchidium nysius (Hall and Whitfield).
Conchidium tenuicostatum (Hall and Whitfield).
Conchidium unguiforme (Ulrich).
Corynotrypa dissimilis (Vine).
Cyathophyllum flos Davis.
Cyathophyllum intertrium Hall.
Cyathophyllum radiata Rominger.
Cyathospongia excrescens Hall.
Cyclonema cancellata (Hall).
Cyrtia exporrecta (Wahlenberg).
Cyrtia myrtia (Billings).
Cystiphyllum gemmula Greene.
Cystiphyllum granilineatum Hall.
Cystiphyllum incurvum Davis.
Cystiphyllum lineatum Davis.
Cystiphyllum louisvillensis Greene.
Cystiphyllum niagarense Hall.
Dalmanella elegantula (Dalman).
Desmograptus pergracilis (Hall and Whitfield).
Diaphorostoma niagarense (Hall).
Dictyostroma undulatum Nicholson.
Dimerocrinus halli (Lyon).
Diorychopora tenuis Davis.
Diphyphyllum billingsi Greene.
Diphyphyllum huronicum Rominger.
Discoceras marshi (Hall).
Eridophyllum cruciforme Davis.
Eridophyllum dividuum Davis.
Eridophyllum louisvillensis Greene.
Eridophyllum rugosum Edwards and Haime.
Eridophyllum sentum Davis.
Favosites cristatus Edwards and Haime.
Favosites cristatus major Davis.
Favosites discus Davis.
Favosites favosus Goldfuss.
Favosites forbesi Edwards and Haime.
Favosites hisingeri Edwards and Haime.
Favosites louisvillensis Davis.
Favosites niagarensis Hall.
Favosites spinigerus Hall.
Gypidula globulosa (Nettelroth).
Gypidula knotti (Nettelroth).
Gypidula (*Sieberella*) *nucleus* (Hall and Whitfield)
Gypidula (*Sieberella*) *uniplicata* (Nettelroth).
Hallia divisa Hall.
Hallia scitula Hall.
Hallopora elegantula (Hall).
Halysites catenularia Linnaeus.
Halysites labyrinthicus Goldfuss.
Heliolites elegans Hall.
Heliolites interstinctus (Linnæus).
Heliolites megastoma McCoy.
Heliolites pyriformis Guettard.
Heliolites subtubulatus McCoy.
Heliophyllum dentilineatum Hall.
Heliophyllum flos Greene.
Heliophyllum gemmiferum Hall.
Heliophyllum mitellum Hall.
Heliophyllum parvum Hall.
Heliophyllum puteatum Hall.
Illænus cornigerus Hall and Whitfield.
Leptæna rhomboidalis (Wilckens).
Lindstromia? herzeri (Hall).
Lophiostroma spindicandum (Parks).
Lophospira casii (Meek and Worthen).
Lyellia americana Edwards and Haime.
Lyellia discoidea Davis.
Lyellia glabra Owen.
Lyellia papillata Rominger.
Lyellia parvituba Rominger.
Lyellia puella Davis.
Macrostylocrinus meeki (Lyon).
Melocrinus oblongus Wachsmuth and Springer.
Meristina maria (Hall).
Michelinia louisvillensis Greene.
Michelinia niagarensis Davis.
Michelinia prima Davis.
Nucleospira elegans? Hall.
Nucleospira pisiformis Hall.
Omphyma verrucosa Rafinesque and Clifford.
Orthis flabellites Foerste.
Orthis nettelrothi Foerste.
Orthis(?) *rugiplicata* Hall and Whitfield.
Orthis subnodosa Hall.
Orthostrophia (*Schizoramma*) *nisis* (Hall and Whi
field).
Pachydictya crassa (Hall).
Pentamerus cylindricus Hall and Whitfield.
Pentamerus oblongus Sowerby.
Pentamerus pergibbosus Hall and Whitfield.
Plasmopora follis Edwards and Haime.
Platyceras unguiforme Hall.

Pleurotomaria casii Meek and Worthen.
Poleumita rugaelineata (Hall and Whitfield).
Ptychophyllum benedicti Greene.
Ptychophyllum fulcratum Hall.
Ptychophyllum invaginatum Davis.
Ptychophyllum ipomœa Davis.
Ptychophyllum stokesi Edwards and Haime.
Reticularia dubia (Nettelroth).
Rhipidomella hybrida (Sowerby).
Rhynchonella(?) bellaforma Nettelroth.
Rhynchonella rugicosta Nettelroth.
Rhynchospira(?) helena (Nettelroth).
Rhynchotreta americana (Hall).
Rhynchotreta cuneata americana Hall.
Romingeria uva Davis.
Romingeria vannula Davis.
Schuchertella subplana (Conrad).
Schuchertella tenuis (Hall).
Spirifer (Delthyris) crispus simplex (Hall).
Spirifer (*Eospirifer*) *eudora* (Hall).
Spirifer (*Eospirifer*) *foggi* (Hall).
Spirifer (*Eospirifer*) *radiatus* (Sowerby).
Spirifer (*Eospirifer*) *rostellum* (Hall and Whitfield).
Streptelasma conulus Rominger.
Streptelasma patula Rominger.
Streptelasma spongaxis Rominger.
Striatopora huronensis Rominger.
Stricklandinia(?) louisvillensis Nettelroth.
Strombodes incertus Davis.
Strombodes mamillaris (Owen).
Strombodes pentagonus Goldfuss.
Strombodes pygmæus Rominger.
Strombodes quadrangularis Davis.
Strombodes separatus Ulrich.
Strombodes sinemurus Davis.
Strombodes striatus (D'Orbigny).
Strombodes unicus Davis.
Stropheodonta profunda (Hall).
Strophonella costatula Hall and Clarke.
Strophonella striata (Hall).
Strophostylus cancellatus (Hall).
Syringopora (*Drymopora*) *fascicularis* (Davis).
Syringopora fibrata Rominger.
Thecia major Rominger.
Thecia minor Rominger.
Trochonema fatuum Hall.
Troostocrinus reinwardti (Troost).
Uncinulus stricklandi (Sowerby).
Uncinulus tennesseensis (Roemer).
Whitfieldella nitida (Hall).
Wilsonia saffordi (Hall).
Wilsonia saffordi depressa (Nettelroth).
Wilsonia wilsoni (Sowerby).
Zaphrentis obliqua Davis.
Zaphrentis scutella Davis.
Zaphrentis socialis Davis.
Zaphrentis subvesicularis Hall.
Zaphrentis umbonata Rominger.

NIAGARAN (BROWNSPORT) OF WEST TENNESSEE.

Allocrinus typus Wachsmuth and Springer.
Alveolites inornatus Foerste.
Alveolites louisvillensis Davis.
Alveolites undosus Miller.
Amplexus shumardi (Edwards and Haime).
Anisophyllum agassizi Edwards and Haime.
Anomoclonella zitteli Rauff.
Asaphocrinus bassleri Springer.
Astræospongia meniscus (Roemer).
Astylospongia imbricato-articulata (Roemer).
Astylospongia præmorsa Goldfuss.
Atrypa arctostriata (Foerste).
Atrypa marginalis (Dalman).
Atrypa reticularis Linnaeus.
Atrypa reticularis niagarensis Nettleroth.
Aulopora roemeri Foerste.
Bilobites bilobus Linnaeus.
Bucanospira expansa Ulrich.
Calceola (*Rhizophyllum*) *tennesseensis* Roemer.
Callicrinus ramifer (Roemer).
Calymene niagarensis Hall.
Camarotœchia lindenensis Foerste.
Carpomanon glandulosum Rauff.
Carpomanon stellatimsulcatum (Roemer).
Carpomanon stellatimsulcatum distorta Rauff.
Caryocrinites bulbulus (Miller and Gurley).
Caryocrinites globosus (Troost).
Caryocrinites milliganæ (Miller and Gurley).
Caryomanon incisolobatum Roemer.
Caryomanon patei Foerste.
Caryomanon roemeri Rauff.
Cheirurus niagarensis (Hall).
Chiastoclonella headi Rauff.
Chonophyllum (*Craterophyllum*) *vulcanius* Foerste.
Cladopora complanata Davis.
Cladopora reticulata Hall.
Climacospongia radiata Hinde.
Clisiophyllum danianum Edwards and Haime.
Coccocrinus bacca Roemer.
Coccocrinus conicus Troost.
Cœlospira saffordi (Foerste).
Cœnites verticillatus (Winchell and Marcy).
Conchidium knappi (Hall and Whitfield).
Conchidium legoense Foerste.
Conchidium lindenense Foerste.
Conchidium littoni (Hall).
Conchidium nysius (Hall and Whitfield).
Cyathocrinus brittsi Miller and Gurley.
Cyathocrinus globosus (Troost).
Cyathophyllum bullatum Hall.
Cyathospongia excrescens Hall.
Cyrtia cliftonensis Foerste.
Cystocrinus tennesseensis Roemer.
Dalmanella arcuaria Hall and Clarke.
Dalmanella elegantula (Dalman).
Dendroclonella rugosa Rauff.
Diaphorostoma brownsportense (Foerste).
Diaphorostoma niagarense (Hall).
Dictyonella concinna Hall.
Dictyonella gibbosa Hall.
Dimerocrinus milliganæ Miller and Gurley.
Dimerocrinus roemeri (Troost).
Diphyphyllum proliferum Foerste.
Ditœcholasma fanninganum (Safford).
Enterolasma waynense (Safford).
Eridophyllum proliferum Foerste.
Erisocrinus? bipartitus (Troost).
Eucalyptocrinus extensus (Troost).
Eucalyptocrinus gibbosus (Troost).
Eucalyptocrinus goldfussi (Troost).
Eucalyptocrinus lindahli Wachsmuth and Springer.
Eucalyptocrinus milliganæ Miller and Gurley.
Eucalyptocrinus nashvillæ (Troost).
Eucalyptocrinus ovalis Hall.
Eucalyptocrinus phillipsi (Troost).

Eucalyptocrinus ventricosus Wachsmuth and Springer.
Favosites cristatus Edwards and Haime.
Favosites cristatus major Davis.
Favosites discoideus (Roemer).
Favosites discus Davis.
Favosites favosus (Goldfuss).
Favosites louisvillensis Davis.
Favosites niagarensis Hall.
Favosites obpyriformis Foerste.
Fenestella acuticosta Roemer.
Fistulipora hemispherica (Roemer).
Gazacrinus milliganæ (Miller and Gurley).
Gnorimocrinus cirrifer Springer.
Gnorimocrinus varians Springer.
Gypidula (Sieberella) roemeri (Hall and Clarke).
Hallopora elegantula (Hall).
Halysites catenularia Linnaeus.
Halysites labyrinthicus Goldfuss.
Haplocrinus granulatus (Troost).
Haplocrinus maximus (Troost).
Haplocrinus ovalis (Troost).
Heliolites interstinctus (Linnaeus).
Heliolites subtubulatus McCoy.
Heliophyllum pegramensis Foerste.
Hindia sphæroidalis Duncan.
Homœospira beecheri Foerste.
Homœospira pisum Foerste.
Homœospira schucherti Foerste.
Homœospira schucherti elongata Foerste.
Laccophyllum acuminatum Simpson.
Lampterocrinus tennesseensis Roemer.
Lecanocrinus meniscus Springer.
Lecanocrinus pisiformis (Roemer).
Leptæna rhomboidalis (Wilckens).
Lyellia discoidea Davis.
Lyellia glabra (Owen).
Lyellia puella Davis.
Marsipocrinus corrugatus (Troost).
Marsipocrinus magnificus (Troost).
Marsipocrinus pentagonalis (Troost).
Marsipocrinus rosæformis (Troost).
Marsipocrinus stellatus (Troost).
Marsipocrinus striatus (Troost).
Marsipocrinus tennesseensis (Roemer).
Marsipocrinus verneuili (Troost).
Melocrinus oblongus Wachsmuth and Springer.
Melocrinus roemeri Wachsmuth and Springer.
Merista tennesseensis Hall and Clarke.
Meristina maria roemeri Foerste.
Nucleospira concentrica Hall.
Omphyma verrucosa Rafinesque and Clifford.
Ormocrinus tennesseensis (Worthen).
Orthoceras defrancii Troost.
Orthostrophia dixoni Foerste.
Orthostrophia (Schizoramma) fissiplica (Roemer).
Pachydictya crassa (Hall).
Palæomanon cratera (Roemer).
Palæomanon pleuriexcavatum (Rauff).
Palæomanon verrucosum (Rauff).
Palæomanon verrucosum bullifera (Rauff).
Pentamerus oblongus Sowerby.
Periechocrinus dubius Wood.
Periechocrinus gorbyi (Miller).
Periechocrinus tennesseensis (Hall).
Pisocrinus quinquelobus Bather.
Plasmopora follis Edwards and Haime.
Platyaxum pegramense (Foerste).
Platyaxum plumatiolatum (Foerste).
Platyaxum platys Foerste.
Platyceras niagarense (Hall).
Protaxocrinus robustus Springer.
Ptychophyllum vulcanum Foerste.
Pycnopegma calloeum Rauff.
Pycnopegma pileum Rauff.
Pycnopegma stromatoporoides Rauff.
Pycnosaccus dubius Springer.
Pycnosaccus welleri Springer.
Reticularia pegramensis Foerste.
Rhipidomella hybrida (Sowerby).
Rhipidomella lenticularis Foerste.
Rhipidomella saffordi Foerste.
Sagenocrinus clarki Springer.
Schuchertella pecten (Roemer).
Schuchertella roemeri (Foerste).
Schuchertella subplana (Conrad).
Siderocrinus ornatus (Troost) Wood.
Sphærexochus romingeri Hall.
Spirifer (Delthyris) crispus (Hisinger).
Spirifer (Eospirifer) foggi (Nettelroth).
Spirifer (Eospirifer?) perenticus (Foerste).
Spirifer (Eospirifer) niagarensis oligoptychus (R mer).
Spirifer (Eospirifer) radiatus (Sowerby).
Spirifer (Delthyris) saffordi (Hall).
Strombodes mamillaris (Owen).
Strombodes pentagonus Goldfuss.
Strombodes striatus D'Orbigny.
Strophonella dixoni Foerste.
Strophonella ganti Foerste.
Strophonella laxiplicata Foerste.
Strophonella prolongata Foerste.
Strophonella roemeri Foerste.
Strophonella semifasciata browneportensis Foerst
Strophonella tenuistriata Foerste.
Strophostylus tennesseensis (Roemer).
Synbathocrinus granulatus (Troost).
Synbathocrinus tennesseensis (Roemer).
Synbathocrinus troosti (Wood).
Tetracystis fenestratus Schuchert.
Thalamocrinus cylindricus Miller and Gurley.
Thalamocrinus ovatus Miller and Gurley.
Thecia major Rominger.
Thecia minor Rominger.
Trematospira simplex Hall.
Troostocrinus reinwardti (Troost).
Uncinulus stricklandi (Sowerby).
Uncinulus tennesseensis (Roemer).
Wilsonia saffordi (Hall).

UPPER NIAGARAN OF NEW YORK, ONTARIO, A WISCONSIN.

(Guelph and Shelby=G; Lockport=L, exclud the Gasport and Shelby members; Gasport m ber=Gas.)

Actinoceras abnorme Hall. (G.)
Actinostroma vulcana Parks. (G.)
Actinostroma whiteavesi niagarense Parks. (L.)
Alveolites niagarensis Nicholson and Hinde. (L
Alveolites thoroldensis Parks. (L.)
Amphicœlia costata (Hall and Whitfield.) (G.)
Amphicœlia neglecta (McChesney). (G.)
Amplexus whitfieldi Miller. (G.)
Anodontopsis concinna Whiteaves. (G.)
Archinacella canadensis (Whiteaves). (G.)

Ascoceras townsendi Whiteaves. (G.)
Atrypa reticularis Linnaeus. (G.)
Avicula triquetra Hall. (G.)
Bellerophon shelbiensis Clarke and Ruedemann. (G.)
Bumastus ioxus Hall. (G.)
Callicrinus acanthinus Ringueberg. (Gas.)
Calymene niagarensis Hall. (G.)
Camarotœchia(?)indianensis (Hall). (G.)
Camarotœchia neglecta (Hall). (G.)
Camarotœchia pisa Hall and Whitfield. (G.)
Cheirurus niagarensis (Hall). (G.)
Cladopora cæspitosa Hall. (L.)
Cladopora cervicornus Hall. (L.)
Cladopora fibrosa Hall. (Gas.)
Cladopora macrophora Hall. (L.)
Cladopora multipora Hall. (L.)
Cladopora seriata Hall. (L.)
Clathrodictyon fastigiatum Nicholson. (G.)
Clathrodictyon ostiolatum (Nicholson). (G.)
Clathrospira deiopeia (Billings). (G.)
Clorinda ventricosa (Hall). (G.)
Cœlocaulus bivittatus (Hall). (G.)
Cœlocaulus estella (Billings). (G.)
Cœlocaulus longispirus (Hall). (G.)
Cœlocaulus macrospirus (Hall). (G.)
Cœlocaulus turritiformis (Hall). (G.)
Cœlocaulus vitellia (Billings). (G.)
Cœnites fruticosus (?Steininger) Hall. (L.)
Cœnites juniperinus Eichwald. (L.)
Cœnites laminatus (Hall). (L.)
Cœnites ramulosus (Hall). (L.)
Conchidium multicostatum (Hall). (G.)
Conchidium obsoletum Hall and Clarke. (G.)
Conchidium occidentale Hall. (G.)
Conchidium scoparium Hall and Clarke. (G.)
Condonochilus striatum Whiteaves. (G.)
Cornulites arcuatus Conrad. (L., G.)
Cyathophyllum thoroldense Lambe. (L.)
Cyclostomiceras(?) brevicorne (Hall). (G.)
Cyclostomiceras orodes (Billings). (G.)
Cyrtoceras bovinum Clarke and Ruedemann. (G.)
Cyrtoceras clitus Billings. (L.)
Cyrtoceras corydon Billings. (L.)
Cyrtoceras rectum Whitfield. (G.)
Cyrtorizoceras curvicameratum Clarke and Ruedemann. (L., G.)
Cyrtospira ventricosa (Hall). (G.)
Cystiphyllum niagarense (Hall). (L.)
Cystostylus infundibulus (Whitfield). (G.)
Dalmanella elegantula Dalman. (L., G.)
Dawsonoceras annulatum (Sowerby). (G.)
Deltacrinus contractus (Ringueberg). (Gas.)
Dendrocrinus? nodobrachiatus Ringueberg. (Gas.)
Diaphorostoma niagarense (Hall). (G.)
Dimerocrinus lockportensis (Ringueberg). (Gas.)
Diphyphyllum cæspitosum (Hall). (L., G.)
Diphyphyllum multicaule Hall.
Discoceras graftonense Meek and Worthen. (G.)
Discoceras ortoni (Meek). G.
Eccyliomphalus circinatus (Whiteaves). (G.)
Encrinurus ornatus Hall and Whitfield. (G.)
Endoceras hudsonicum Parks. (G.)
Enterolasma caliculus (Hall). (G.)
Eotomaria areyi Clarke and Ruedemann. (G.)
Eotomaria durhamensis (Whiteaves). (G.)
Eotomaria galtensis (Billings). (G.)
Eotomaria kayseri Clarke and Ruedemann. (G.)
Eucalyptocrinus inconspectus Ringueberg. (L.)
Eucalyptocrinus muralis Ringueberg. (Gas.)
Eucalyptocrinus proboscidalis Miller. (G.)
Eucalyptocrinus splendidus Hall and Whitfield. (G.)
Euomphalopterus elora (Billings). (G.)
Euomphalopterus halei (Hall). (G.)
Euomphalopterus tyrrelli Parks. (G.)
Euomphalopterus valeria (Billings). (G.)
Euomphalopterus velaris Whiteaves. (G.)
Euomphalus fairchildi Clarke and Ruedemann. (G.)
Euomphalus galtensis Whiteaves. (G.)
Euomphalus inornatus (Whiteaves). (G.)
Eurypterus (Tylopterus) boylei (Whiteaves). (G.)
Favosites forbesi Edwards and Haime. (L., G.)
Favosites hisingeri Edwards and Haime.
Favosites niagarensis Hall. (L., G.)
Favosites occidens Whitfield. (G.)
Favosites pyriformis (Hall). (L.)
Gomphocystites tenax Hall. (L.)
Goniophora crassa Whiteaves. (G.)
Gyroceras farcimen Clarke and Ruedemann. (G.)
Halysites agglomerata Hall. (L., G.)
Halysites catenularia Linnaeus. (L., G.)
Halysites catenularia micropora (Whitfield). (G.)
Halysites compactus Rominger. (G.)
Heliolites elegans Hall. (L.)
Heliolites interstinctus Linnaeus.
Heliolites pyriformis Guettard. (L.)
Heliolites spiniporus Hall. (L.)
Hermatostroma guelphica Parks. (G.)
Heterocystites armatus Hall. (L.)
Hexameroceras hertzeri (Hall and Whitfield). (G.)
Holopea gracia Billings. (G.)
Holopea guelphensis Billings. (G.)
Holopea harmonia Billings. (G.)
Holopea magniventra Whitfield. (G.)
Holopea? occidentalis Nicholson. (G.)
Hormotoma patriciænse Parks. (G.)
Hormotoma whiteavesi Clarke and Ruedemann. (G.)
Ichthyocrinus conoideus Ringueberg. (Gas.)
Illænus aboynensis Whiteaves. (G.)
Illænus springfieldensis Meek. (G.)
Illionia canadensis Billings. (G.)
Illionia? costulata Whiteaves. (G.)
Ischadites canadensis Billings.
Kionoceras darwini Billings. (G.)
Kionoceras strix (Hall and Whitfield). (G.)
Labechia durhamensis Parks. (G.)
Labechia minora Parks. (G.)
Leiopteria subplana (Hall). (G.)
Leperditia balthica guelphica Jones. (G.)
Liospira perlata (Hall). (G.)
Lophospira bispiralis (Hall). (G.)
Lophospira? chamberlini (Whitfield). (G.)
Lophospira conradi (Hall). (G.)
Lophospira guelphica Whiteaves. (G.)
Lophospira hespelerensis (Whiteaves). (G.)
Lophospira mylitta (Billings). (G.)
Lophospira xanthippe (Billings). (G.)
Loxonema boydi Hall. (G.)
Loxonema(??) magnum Whitfield. (G.)
Loxoplocus solutus (Whiteaves). (G.)

Melonoceras arcticameratum (Hall). (G.)
Marsipocrinus præmaturus (Hall and Whitfield). (G.)
Megalomus canadensis Hall. (G.)
Megalomus compressus Nicholson and Hinde. (G.)
Melocrinus sculptus (Hall). (L.)
Modiomorpha acuminata Parks. (G.)
Monomorella durhamensis Whiteaves. (G.)
Monomorella egani Hall and Clarke. (G.)
Monomorella greenei Hall and Clarke. (G.)
Monomorella newberryi Hall and Whitfield. (G.)
Monomorella noveboracum Clarke and Ruedemann. (G.)
Monomorella orbicularis Billings. (G.)
Monomorella ortoni Hall and Clarke. (G.)
Monomorella ovata Whiteaves. (G.)
Monomorella ovata lata Whiteaves. (G.)
Monomorella prisca Billings. (G.)
Murchisonia?? billingsana Miller. (G.)
Mytilarca acutirostra (Hall). (G.)
Oncoceras pettiti Billings. (L.)
Oncoceras teucer Billings. (L.)
Orthoceras brontes Billings. (L.)
Orthoceras carltonensis Whitfield. (G.)
Orthoceras oberon Billings. (L.)
Orthoceras pylades Billings. (L.)
Orthoceras rectum Worthen. (G.)
Orthoceras remus Billings. (L.)
Orthoceras selwyni Billings. (G.)
Orthoceras sublæve D'Orbigny. (G.)
Orthoceras varro Billings. (L.)
Pentamerus oblongus bisinuatus (McChesney). (G.)
Periechocrinus speciosus (Hall). (L.)
Phanerotrema occidens (Hall). (G.)
Phragmoceras hector Billings. (G.)
Phragmoceras nestor canadense Whiteaves. (G.)
Phragmoceras parvum (Hall and Whitfield). (G.)
Phragmoceras whitneyi Parks. (G.)
Pleurotomaria cyclostoma Whiteaves. (G.)
Pleurotomaria townsendii Whiteaves. (G.)
Poleumita crenulata (Whiteaves). (G.)
Poleumita durhamensis (Whiteaves). (G.)
Poleumita hudsonica Parks. (G.)
Poleumita macrolineata (Whitfield). (G.)
Poleumita parvula (Whiteaves). (G.)
Poleumita scamnata Clarke and Ruedemann. (G.)
Poleumita? sulcata (Hall). (G.)
Poleumita viola (Billings). (G.)
Poterioceras sauridens Clarke and Ruedemann. (G.)
Prolucina galtensis (Whiteaves). (G.)
Protokionoceras crebescens Hall. (G.)
Protokionoceras medullare (Hall). (G.)
Protokionoceras trusitum (Clarke and Ruedemann). (G.)
Protophragmoceras patronus Clarke and Ruedemann. (G.)
Pterinea bradti Grabau. (G.)
Pterinea undata (Hall). (G.)
Pycnomphalus solarioides (Hall). (G.)
Pycnostylus elegans Whiteaves. (G.)
Pycnostylus guelphensis Whiteaves. (G.)
Rhinobolus galtensis (Billings). (G.)
Rhipidomella hybrida (Sowerby). (L., G.)
Rhynchotreta cuneata americana Hall. (L.)
Rosenella glenelgensis Parks. (G.)
Scenella conica Whiteaves. (G.)
Schizotreta tenuilamellata (Hall). (L.)
Septameroceras septore (Hall). (G.)
Spirifer (*Delthyris*) *crispus* (Hisinger). (G.)
Spirifer (*Eospirifer*) *radiatus* (Sowerby). (G.)
Stictopora graminifolia Ringueberg. (Gas.)
Straparollina daphne (Billings). (G.)
Straparollus hippolyta Billings. (G.)
Straparollus niagarensis Hall and Whitfield. (G
Streptoceras heros Billings. (L.)
Streptoceras janus Billings. (L.)
Streptomytilus eduliformis Clarke and Ruedema
(G.)
Stricklandinia multilirata Whitfield. (G.)
Stromatopora antiqua (Nicholson and Mu
(L. G.)
Stromatopora galtensis Dawson. (G.)
Stromatoporella elora Parks. (G.)
Stromatoporella elora minuta Parks. (G.)
Subulites compactus Whiteaves. (G.)
Subulites terebriformis Hall and Whitefield. (G
Tremanotus alpheus (Hall). (G.)
Tremanotus angustatus Hall. (G.)
Tremanotus ? trigonostoma Hall and Whitfield.
Trimerella acuminata Billings. (G.)
Trimerella billingsi Dall. (G.)
Trimerella dalli Davidson and King. (G.)
Trimerella grandis Billings. (G.)
Trimerella ohioensis Meek. (G.)
Trochoceras costatum (Hall). (G.)
Trochoceras desplainense McChesney. (G.)
Trochonema fatuum (Hall). (G.)
Trochonema pauper ohioense Hall and Whitf
(G.)
Troostocrinus subcylindricus (Hall and Whitfi
(G.)
Turritoma boylei (Nicholson). (G.)
Turritoma constricta (Whiteaves). (G.)
Tyrellia severnensis Parks. (G.)
Whitfieldella hyale (Billings). (G.)
Whitfieldella nitida (Hall). (G. L.)
Zaphrentis racinensis Whitfield. (G.)
Zaphrentis turbinata (Hall). (L.)

NIAGARAN (RACINE) OF ILLINOIS AND WISCON

Achradocrinus patulus Slocom.
Acidaspis vanhorni Weller.
Actinoceras abnorme (Hall).
Ambonychia undulata (Whitfield).
Ampheristocrinus dubius Weller.
Amphicœlia leidyi Hall.
Amphicœlia negelcta (McChesney).
Amplexus fenestratus Whitfield.
Amplexus shumardi (Edwards and Haime).
Ancistroceras? dyeri Hyatt.
Anistrophia interplicata Hall.
Archæocrinus depressus Weller.
Arctinurus chicagoensis Weller.
Arctinurus occidentalis (Hall).
Atrypa nodostriata Hall.
Atrypa reticularis Linnaeus.
Botryocrinus polyxo Hall.
Bumastus armatus (Hall).
Bumastus chicagoensis (Weller).
Bumastus cuniculus (Hall).
Bumastus graftonensis Meek and Worthen.
Bumastus harrisi (Weller).
Bumastus imperator (Hall).
Bumastus insignis (Hall).

Bumastus ioxus Hall.
Bumastus niagarensis (Whitfield).
Callicrinus bifurcatus Weller.
Callicrinus bilobus (Weller).
Callicrinus cornutus (Hall)
Callicrinus corrugatus (Weller)
Callicrinus desideratus Weller.
Callicrinus digitatus (Weller).
Callicrinus hydei (Weller).
Callicrinus longispinus Weller.
Callicrinus pentangularis Weller.
Calymene niagarensis Hall.
Camarotœchia(?) indianensis (Hall).
Camarotœchia neglecta (Hall).
Capellina mira Hall and Clarke.
Caryocrinites ornatus (?) Say.
Ceratocephala goniata Warder.
Cheirurus hydei (Weller).
Cheirurus niagarensis (Hall).
Chicagocrinus inornatus Weller.
Chicagocrinus ornatus Weller.
Cladopora lichenoides Winchell and Marcy.
Cladopora reticulata Hall.
Clidophorus chicagoensis Miller).
Clorinda arcuosa (McChesney).
Clorinda ventricosa (Hall).
Cœlocystis subglobosus (Hall).
Cœnites verticillatus (Winchell and Marcy).
Conchidium crassoradius (McChesney).
Conchidium greenii Hall and Clarke.
Conchidium multicostatum (Hall).
Conocardium niagarensis Winchell and Marcy.
Conocardium ornatum Winchell and Marcy.
Corydocephalus phlyctainoides (Green).
Corymaocrinus chicagoensis Weller.
Corymbocrinus niagarensis Weller
Crinocystites chrysalis Hall.
Crinocystites(?)rectus (Hall).
Crotalocrinus cora (Hall).
Crotalocrinus? vanhornei (Miller).
Cyathocrinus turbinatus Weller.
Cyclonema? elevatum Hall.
Cyclostomiceras(?) brevicorne (Hall).
Cyphocrinus chicagoensis Weller.
Cypricardinia arata Hall.
Cypricardites?? quadrilatera Hall.
Cyrtia meta (Hall).
Cyrtoceras infundibulum Whitfield.
Cyrtoceras laterale Hall.
Cyrtoceras lucillum Hall.
Cyrtoceras pusillum Hall.
Cyrtoceras rigidum Hall.
Cyrtorizoceras dardanum (Hall).
Cyrtorizoceras fosteri (Hall).
Cystiphyllum niagarense Hall.
Cystostylus infundibulus (Whitfield).
Cystostylus typicus Whitfield.
Dalmanella elegantula (Dalman).
Dalmanites arkansanus Van Ingen.
Dalmanites illinoiensis Weller.
Dalmanites platycaudatus Weller.
Dalmanites vigilans Hall.
Dawsonoceras annulatum (Sowerby).
Deiphon americanus Weller.
Diaphorostoma niagarensis (Hall).
Dicranopeltis decipiens (Winchell and Marcy).
Dicranopeltis nasuta Weller.
Dicranopeltis telleri Weller.
Dimerocrinus campanulatus Slocum.
Dimerocrinus egani (Miller).
Dimerocrinus halli (Lyon).
Dimerocrinus occidentalis (Hall).
Dimerocrinus pentangularis (Hall).
Dinobolus conradi (Hall).
Diphyphyllum cæspitosum (Hall).
Edmondia? nilesi Winchell and Marcy.
Encrinurus egani Miller.
Encrinurus nereus Hall.
Encrinurus ornatus Hall and Whitfield.
Encrinurus tuberculifrons Weller.
Enterolasma caliculum (Hall).
Eotomaria laphami (Whitfield).
Eucalyptocrinus asper Weller.
Eucalyptocrinus crassus Hall.
Eucalyptocrinus depressus Miller.
Eucalyptocrinus egani (Miller).
Eucalyptocrinus inornatus Weller.
Eucalyptocrinus magnus Worthen.
Eucalyptocrinus nodulosus Weller.
Eucalyptocrinus obconicus Hall.
Eucalyptocrinus ornatus Hall.
Eucalyptocrinus rotundus Miller.
Eucalyptocrinus turbinatus Miller.
Euomphalopterus halei (Hall).
Favosites favosus Goldfuss.
Favosites hisingeri Edwards and Haime.
Favosites niagarensis Hall.
Gazacrinus major Weller.
Gazacrinus minor Weller.
Goldius acamas (Hall).
Goldius laphami (Whitfield).
Goldius occasus (Winchell and Marcy).
Gomphoceras scrinium Hall.
Gomphocystites clavus Hall.
Gomphocystites glans Hall.
Gyroceras bannisteri Winchell and Marcy.
Habrocrinus benedicti (Miller).
Habrocrinus farringtoni Slocum.
Habrocinus lemontensis Slocum.
Hallia divergens Hall.
Hallia pluma Hall.
Hallicystis elongatus (Jaekel).
Hallicystis imago (Hall).
Halysites agglomeratus Hall.
Halysites catenularia (Linnaeus).
Halysites catenularia micropora (Whitfield).
Halysites labyrinthicus Goldfuss.
Harpes telleri Weller.
Heliolites macrostylus Hall.
Heliolites pyriformis Guettard.
Heliolites spiniporus Hall.
Holocystites abnormis Hall.
Holocystites alternatus (Hall).
Holocystites cylindricus (Hall).
Holocystites jolietensis Miller.
Holocystites ovatus Hall.
Holocystites scutellatus Hall.
Holocystites sphæricus Winchell and Marcy.
Holocystites winchelli Hall.
Holopea chicagoensis Winchell and Marcy.
Holopea niagarensis Winchell and Marcy.
Ichthyocrinus corbis Winchell and Marcy.
Ichthyocrinus subangularis Hall.
Illænoides triloba Weller.

Illænus transversalis Weller.
Kionoceras cancellatum (Hall).
Lampterocrinus? dubius Weller.
Lampterocrinus inflatus (Hall).
Lampterocrinus robustus Weller.
Lampterocrinus? subglobosus Weller.
Lecanocrinus pisiformis (Roemer).
Lecanocrinus waukoma (Hall).
Leptæna rhomboidalis (Wilckens).
Lindströmia? columellata (Hall).
Lindströmia wisconsinensis (Whitfield).
Lophospira conradi (Hall).
Loxonema leda Hall.
Lyriocrinus melissa (Hall).
Lyriocrinus sculptilis Hall.
Lysocystites nodosus (Hall).
Macrostylocrinus obconicus Weller.
Macrostylocrinus semiradiatus (Hall).
Macrostylocrinus striatus Hall.
Macrostylocrinus subglobosus Weller.
Marsipocrinus chicagoensis (Weller).
Matheria recta (Hall).
Melocrinus obpyramidalis (Winchell and Marcy).
Meristina maria (Hall).
Meristina trisinuata (McChesney).
Metopolichas pugnax (Winchell and Marcy).
Modiolopsis dictæus Hall.
Monomorella kingi Hall and Clarke.
Mourlonia worthenana (Miller).
Myelodactylus bridgeportensis Miller.
Mytilarca acutirostra (Hall).
Nautilus?? cancellatus McChesney.
Nautilus?? capax (Hall).
Odontopleura illinoisensis Weller.
Oncoceras orcas (Hall).
Orthis flabellites spania Hall and Clarke.
Orthis(?) glypta Hall and Clarke.
Orthoceras alienum Hall.
Orthoceras cameolare McChesney.
Orthoceras crebristriatum Meek and Worthen.
Orthoceras jolietense Meek and Worthen.
Orthoceras niagarense Hall.
Orthoceras rectum Worthen.
Orthoceras strixlineatum McChesney.
Orthoceras subbaculum Meek and Worthen.
Orthoceras wauwatosense Whitfield.
Orthotropia dolomitica Hall and Clarke.
Palæocardia cordiformis Hall.
Parastrophia greenei Hall and Clarke.
Parastrophia latiplicata Hall and Clarke.
Parastrophia multiplicata Hall and Clarke.
Pentamerus bisinuatus (McChesney).
Pentamerus oblongus Sowerby.
Pentamerus pergibbosus Hall and Whitfield.
Periechocrinus egani (Miller).
Periechocrinus inflex (Winchell and Marcy).
Periechocrinus marcouanus (Winchell and Marcy).
Periechocrinus necis (Winchell and Marcy).
Periechocrinus urniformis (Miller).
Periechocrinus whitfieldi (Hall).
Phacops handwerki Weller.
Phanerotrema occidens (Hall).
Phragmoceras hoyi Whitfield.
Phragmoceras hoyi compressum Whitfield.
Phragmoceras nestor Hall.
Pisocrinus gemmiformis Miller.
Pisocrinus quinquelobus Bather.
Platyceras senex (Winchell and Marcy).
Platycrinus angusta Slocum.
Platycrinus? dubius Weller.
Plectambonites transversalis Dalman.
Pleurotomaria axion Hall.
Pleurotomaria casei Meek and Worthen.
Pleurotomaria cyclonemoides Meek and Worthen.
Pleurotomaria gonopleura Winchell and Marcy.
Pleurotomaria hoyi Hall.
Pleurotomaria? idia Hall.
Pleurotomaria sigaretoides Winchell and Marcy.
Proetus? handwerki Weller.
Protokionoceras crebescens Hall.
Protokionoceras medullare (Hall).
Protophragmoceras hercules Winchell and Marcy.
Pterinea brisa Hall.
Pterinea cyrtodontoidea Winchell and Marcy.
Pterinea strixcosta (McChesney).
Pterinea volans Winchell and Marcy.
Ptychophyllum floriforme Hall.
Ptychophyllum stokesi Edwards and Haime.
Pycnosaccus americanus Weller.
Raphistoma?? niagarense Whitfield.
Receptaculites hemisphericus (Hall).
Receptaculites tessellatus (Winchell and Marcy).
Rhipidomella hybrida (Sowerby).
Rhombopteria (*Newsomella*) *revoluta* (Winchell and Marcy).
Rhynchotreta cuneata americana Hall.
Septameroceras septore (Hall).
Schuchertella subplana (Conrad).
Siphonocrinus armosus (McChesney).
Siphonocrinus pentagonus Wachsmuth and Springer.
Sphærexochus romingeri Hall.
Spirifer (*Eospirifer*) *eudora* (Hall).
Spirifer (*Eospirifer*) *gibbosus* (Hall).
Spirifer (*Eospirifer*) *nobilis* (Barrande).
Spirifer (*Eospirifer*) *radiatus* (Sowerby).
Spirifer? similor (Winchell and Marcy).
Stephanocrinus gemmiformis Hall.
Stephanocrinus obconicus Slocum.
Stephanocrinus osgoodensis Miller.
Stephanocrinus skiffi Slocum.
Straparollus mopsus Hall.
Staurocephalus obsoletus Weller.
Streptelasma? extans Hall.
Streptelasma? limitare Hall.
Streptomytilus aphæa (Hall).
Strombodes pentagonus Goldfuss.
Stropheodonta macra (Winchell and Marcy.
Stropheodonta profunda (Conrad).
Strophonella semifasciata (Hall).
Strophonella striata (Hall).
Subulites brevis Winchell and Marcy.
Subulites gracilis Miller.
Syringopora compacta Billings.
Syringopora dalmani Billings.
Syringopora retiformis Billings.
Syringopora verticillata Goldfuss.
Thaleops pterocephalus (Whitfield).
Tremanotus alpheus (Hall).
Tremanotus chicagoensis (McChesney).
Tremanotus crassolaris (McChesney).
Tremanotus pervolutus (McChesney).
Triplecia niagarensis Hall and Clarke.
Trochoceras costatum (Hall).

Trochoceras desplainense McChesney.
Trochoceras notum Hall.
Trochonema fatuum (Hall).
Trochonema pauper (Hall).
Trechonema (*Eunema*) *trilineatum* (Hall).
Turritoma laphami (Hall).
Zaphrentis cristulata Hall.
Zaphrentis racinensis Whitfield.
Zaphrentis subvada Hall.
Zophocrinus globosus Slocum.
Zophocrinus howardi Miller.
Zophocrinus pyriformis Slocum.

NIAGARAN (WAUKESHA) OF WISCONSIN.

(Lower Coral bed=L.; Upper Coral bed=U.)

Amplexus fenestratus Whitfield. (U.)
Atrypa reticularis (Linnaeus). (U.)
Cladopora reticulata Hall.
Clorinda ventricosa (Hall). (L., U.)
Cœnites lunatus Nicholson and Hinde. (U.)
Cystiphyllum niagarense (Hall). (U.)
Cystostylus typicus Whitfield. (L., U.)
Dinobolus conradi (Hall). (L.)
Diphyphyllum cæspitosum (Hall.) (L., U.)
Discosorus conoideus Hall. (L.)
Enterolasma caliculum (Hall). (U.)
Favosites favosus Goldfuss. (L., U.)
Favosites hisingeri Edwards and Haime. (L., U.)
Favosites niagarense Hall. (L., U.)
Goldius acamas (Hall). (U.)
Halysites agglomeratus Hall. (L., U.)
Halysites catenularia (Linnaeus). (L., U.)
Halysites catenularia micropora Whitfield. (L., U.)
Heliolites pyriformis Guettard. (U.)
Murchisonia billingsana Miller. (L.)
Orthis flabellites Foerste. (U.)
Orthoceras alienum Hall. (L.)
Pentamerus oblongus Sowerby. (L., U.)
Pentamerus oblongus bisinuatus (McChesney). (L., U.)
Phragmoceras labiatum Whitfield. (L.)
Strombodes pentagonus Goldfuss. (U.)
Syringopora compacta Billings. (U.)
Syringopora dalmani Billings. (L., U.)
Tremanotus trigonostoma (Hall and Whitfield). (L.)

NIAGARAN OF LAKE HURON REGION.

(Mainly of Louisville age.)

Actinoceras backi (Stokes).
Actinoceras bayfieldi (Stokes).
Actinoceras beaumonti Castelnau.
Actinoceras beudanti Castelnau.
Actinocerus blainvillei Castelnau.
Actinoceras cordieri Castelnau.
Actinoceras dufresnoyi Castelnau.
Actinoceras sphæroidale (Stokes).
Actinoceras whitei (Stokes).
Actinostroma tenuifilatum Parks.
Alveolites undosus Miller.
Amplexus shumardi (Edwards and Haime).
Blothrophyllum cæspitosum Rominger.
Cladopora laqueata Rominger.
Clathrodictyon cystosum Parks.
Clathrodictyon drummondense Parks.
Clathrodictyon striatellum (D'Orbigny).
Clathrodictyon variolare (Von Rosen).
Clathrodictyon vesiculosum astrodistans Parks.
Cœnites crassus (Rominger).
Cyathophyllum radicula Rominger.
Cyathophyllum solitarium Billings.
Cystiphorolites major (Rominger).
Cystiphorolites variolosus (Rominger).
Dania huronica Edwards and Haime.
Diphyphyllum huronicum Rominger.
Diphyphyllum? multicaule (Hall).
Discosorus conoideus Hall.
Discosorus gracilis Foord.
Discosorus remotus Foord.
Eridophyllum rugosum Edwards and Haime.
Favosites hispidus Rominger.
Favosites niagarensis Hall.
Favosites obliquus Rominger.
Halysites compactus Rominger.
Halysites labyrinthicus (Goldfuss).
Heliolites interstinctus (Linnaeus).
Huronia bigsbyi Stokes.
Huronia distincta Barrande.
Huronia minuens Barrande.
Huronia obliqua Stokes.
Huronia portlocki Stokes.
Huronia turbinata Stokes.
Huronia vertebralis Stokes.
Lophiostroma granulatum (Parks).
Lophiostroma magnum (Parks).
Lophiostroma romingeri (Parks).
Lyellia americana Edwards and Haime.
Lyellia decipiens Rominger.
Lyellia papillata Rominger.
Lyellia parvituba Rominger.
Lyellia superba (Billings).
Omphyma congregata Billings.
Omphyma verrucosa Rafinesque and Clifford.
Orthoceras castelnaui Verneuil.
Orthoceras filiforme Castelnau.
Plasmopora petaliformis (Lonsdale).
Ptychophyllum stokesi Edwards and Haime.
Romingeria niagarensis (Rominger).
Rosenella? manitoulinensis Parks.
Streptelasma conulus Rominger.
Streptelasma patula Rominger.
Streptelasma spongiaxis Rominger.
Striatopora huronensis Rominger.
Strombodes eximius Billings.
Strombodes mamillaris (Owen).
Strombodes pentagonus Goldfuss.
Strombodes pygmæus Rominger.
Strombodes striatus (D'Orbigny).
Syringopora annulata Rominger.
Syringoporo bifurcata Lonsdale.
Syringopora retiformis Billings.
Syringopora verticillata Goldfuss.
Syringostroma niagarense Parks.
Syringostroma parallelum Parks.
Vermipora niagarensis Rominger.
Zaphrentis latisinus Hall.
Zaphrentis stokesi Edwards and Haime.
Zaphrentis umbonata Rominger.

NIAGARAN (MISCELLANEOUS HORIZONS) OF IOWA, ARKANSAS, WISCONSIN, ILLINOIS, INDIANA, OHIO, AND MISSOURI.

Acidapsis obsoleta Van Ingen. Ark. (St. Clair.)
Acidapsis quinquespinosa Lake. Ark. (St. Clair.)
Actinoceras deshayesi Castelnau. Wis.

Amplexus junctus Hall. Ill.
Amplexus shumardi (Edwards and Haime). Iowa.
Amplexus uniformis Hall. Ill.
Ampyx niagarensis Van Ingen. Ark. (St. Clair.)
Anisocrinus oswegoensis (Miller and Gurley). Ill.
Arctinurus obcius (Hall). Iowa.
Ascoceras southwelli Worthen. Ill.
Astylospongia?? christiana Meek and Worthen. Ill.
Aulocerium savagei Parks. Ill.
Bucania cyclostoma Calvin. Iowa.
Bucania perornata Calvin. Iowa.
Bumastus niagarensis (Whitfield). Ark. (St. Clair.)
Calymene altirostris Van Ingen. Ark. (St. Clair.)
Ceratocephala coalescens Van Ingen. Ark. (St. Clair.)
Ceratocephala depauperata Van Ingen. Ark. (St. Clair.)
Ceratocephala goniata Warder. Ohio.
Ceratocephala nodulata Van Ingen. Ark. (St. Clair.)
Cerionites dactyloides (Owen). Iowa.
Clathrodictyon cystosum Parks. Iowa.
Clathrodictyon vesiculosum Nicholson and Murie. Ill.
Conocardium tegulum Hall.
Cordylocrinus? dubius Rowley. Mo. (Bainbridge.)
Corydocephalus depauperatus. Ark. (St. Clair.)
Corydocephalus phlyctainoides (Green). Ohio; Ark. (St. Clair.)
Cyathocrinus? ovalis Rowley. Mo. (Bainbridge.)
Cyathophyllum radicula Rominger. Iowa.
Cyphaspis arkansanus Van Ingen. (St. Clair.)
Cyrtograptus ulrichi Ruedemann. Mo. (Bainbridge.)
Cyrtorizoceras dardanum (Hall). Ill.
Cystiphorolites minor (Rominger). Iowa.
Dalmanella elegantula (Dalman). Ill., Iowa, etc.
Dalmanites arkansanus Van Ingen. Ark. (St. Clair.)
Dalmanites vigilans Hall. Wis., Ark. (St. Clair.)
Dawsonoceras annulatum (Sowerby). Iowa, Ohio, etc.
Deiphon forbesi Barrande. Ark. (St. Clair.)
Diaphorostoma trigonostoma (Meek). Ohio.
Dicranopeltis arkansana (Van Ingen). Ark. (St. Clair.)
Dimorphograptus decussatus Elles and Wood, Ark. (Blaylock.)
Discoceras graftonense Meek and Worthen. Ill.
Discoceras marshi (Hall). Ill.
Encrinurus ornatus Hall and Whitfield. Ohio, etc.
Goniophyllum pyramidale (Hisinger). Iowa.
Halysites catenularia (Linnaeus). Ill., Wis., etc.
Halysites radiatus Whitfield. Iowa.
Helicopora latispiralis Claypole. Ohio.
Heliolites interstinctus (Linnaeus). Ill., Iowa, etc.
Heliolites subtubulatus (McCoy). Ohio, Ill., etc.
Hindia sphæroidalis Duncan. Ill., Iowa, etc.
Holopea grandis Calvin. Iowa.
Illænus danielsi Miller and Gurley. Ill.
Lecanocrinus hemisphericus Rowley. Mo. (Bainbridge.)
Lyellia glabra (Owen). Iowa, Ill.
Melocrinus wittenbergensis Rowley. Mo.
Monograptus argutus Lapworth. Ark. (Blaylock.)
Monograptus distans (Portlock). Ark. (Blaylock.)
Monograptus gregarius Lapworth. Ark. (Blaylock.)
Odontopleura arkansana Van Ingen. Ark. (St. Clair.)
Odontopleura ortoni (Foerste). Ark. (St. Clair.)
Orthoceras franklinense Miller. Ind.
Orthoceras loxias Hall. Wis.
Orthoceras unionense Worthen. Ill.
Palæodictyota bella (Hall and Whitfield). Ohio.
Pentamerus oblongus Sowerby. Iowa, Ohio.
Pentamerus oblongus corrugatus Weller and Davidson. Iowa.
Pentamerus oblongus maquoketa Hall and Clarke. Wis., Iowa.
Pentamerus oblongus subrectus Hall and Clarke. Iowa.
Pentamerus pergibbosus Hall and Whitfield. Ohio.
Periechocrinus ornatus (Hall and Whitfield). Ohio, Ind.
Petalocrinus inferior Bather. Iowa.
Petalocrinus(?) major Weller and Davidson. Iowa.
Petalocrinus mirabilis Weller and Davidson. Iowa.
Phragmoceras byronense Worthen. Ill.
Phragmoceras ellipticum Hall and Whitfield. Ohio.
Pisocrinus glabellus Rowley. Mo. (Bainbridge.)
Pisocrinus globosus (Ringueberg). Mo. (Bainbridge.)
Pisocrinus gorbyi Miller. Mo. (Bainbridge.)
Pisocrinus granulosus Rowley. Mo. (Bainbridge.)
Plectambonites productus Hall and Clarke. Ohio.
Proetus corrugatus Van Ingen. Ark. (St. Clair).
Proetus subannulatus Van Ingen. Ark. (St. Clair.)
Ptychophyllum expansum (Owen). Iowa, Wis.
Receptaculites ohioensis Hall and Whitfield. Ohio.
Retiolites (Gladiograptus) perlatus (Nicholson). Ark. (Blaylock.)
Rhinobolus davidsoni Hall and Clark. Wis.
Rhipidomella hybrida (Sowerby). Ill., Iowa, etc.
Romingeria niagarensis (Rominger). Iowa.
Schuchertella subplana (Conrad). Mo., etc.
Skenidium? nodocostatum Rowley. Mo. (Bainbridge.)
Sphærexochus romingeri Hall. Ark. (St. Clair.)
Staurocephalus murchisoni Barrande. Ark. (St. Clair.)
Straparollus bicarinatus Calvin. Iowa.
Straparollus tricarinatus Calvin. Iowa.
Streptelasma patula Rominger. Iowa.
Streptelasma spongaxis Rominger. Iowa.
Streptis grayi (Davidson). Ark. (St. Clair.)
Striatopora (Stribalocystites?) elongatus (Rowley). Mo.
Stribalocystites missouriensis (Rowley). Mo. (Bainbridge).
Stricklandinia castellana White. Iowa.
Stricklandinia deformis Meek and Worthen. Ill.
Strombodes gigas (Owen). Iowa, Wis.
Strombodes mamillaris (Owen). Iowa, Wis., etc.
Trochoceras æneas Hall. Iowa.
Troostocrinus? dubius Rowley. Mo.
Vermipora niagarensis Rominger. Iowa.
Zaphrentis pressula Hall. Ill.
Zaphrentis stokesi Edwards and Haime. Iowa.

NIAGARAN OF NORTHERN INDIANA.

Amphicœlia neglecta (McChesney).
Anastrophia internascens Hall.
Anodontopsis wabashensis Kindle and Breger.
Ascoceras indianensis Newell.

Ascoceras newberryi Billings.
Atrypa calvini Nettelroth.
Atrypa recticularis (Linnaeus).
Bumastus armatus (Hall).
Bumastus insignis (Hall).
Bumastus ioxus Hall.
Calymene vogdesi Foerste.
Camarotœchia(?) acinus (Hall).
Ceratocephala goniata Warder.
Cheirurus niagarensis (Hall).
Conchidium laqueatum (Conrad).
Conchidium littoni (Hall).
Conchidium multicostatum (Hall).
Conchidium trilobatum Kindle and Breger.
Conchidium unguiformis (Ulrich).
Conocardium multistriatum Kindle and Breger.
Conocardium oweni Kindle and Breger.
Cyclonema cancellatum (Hall).
Cyrtia exporrecta myrtia (Billings).
Dalmanella elegantula (Dalman).
Dalmanites vigilans Hall.
Dawsonoceras annulatum (Sowerby).
Diaphorostoma niagarense (Hall).
Dinobolus conradi (Hall).
Discoceras marshii (Hall).
Eatonia goodlandensis Kindle and Breger.
Encrinurus indianensis Kindle and Breger.
Eotomaria laphami (Whitfield).
Euomphalopterus alatus americanus Kindle and Breger.
Euomphalopterus alatus limatoideus Kindle and Breger.
Gomphoceras lineare Newell.
Gomphoceras projectum Newell.
Gomphoceras scrinium Hall.
Gomphoceras wabashense Newell.
Gypidula (Sieberella) galeata (Dalman).
Gypidula (Sieberella) nucleus (Hall and Whitfield).
Hexameroceras cacabiforme Newell.
Hexameroceras delphicolum Newell.
Kionoceras cancellatum (Hall).
Kionoceras delphiense (Kindle and Breger).
Kionoceras kentlandense (Kindle and Breger).
Leptæna rhomboidalis (Wilckens).
Meristina maria (Hall).
Meristina rectirostris Hall.
Nucleospira pisiformis Hall.
Odontopleura ortoni (Foerste).
Orthis flabellites Foerste.
Orthis(?)subnodosa Hall.
Orthoceras niagarense Hall.
Orthoceras obstructum Newell.
Orthoceras rigidum Hall.
Orthoceras unionense Worthen.
Pentameroceras mirum (Barrande).
Pentamerus oblongus compressa Kindle and Breger.
Pentamerus oblongus cylindricus Hall and Whitfield.
Phragmoceras angustum (Newell).
Phragmoceras ellipticum Hall and Whitfield.
Phragmoceras parvum Hall and Whitfield.
Pholidostrophia niagarensis Kindle and Breger.
Pisocrinus benedicti Miller.
Plectoceras bickmoreanum (Whitfield).
Plethomytilus cuneatus Kindle and Breger.
Pleurotomaria(?) axion Hall.
Pleurotomaria eloroidea Kindle and Breger.
Pleurotomaria hoyi Hall.
Pleurotomaria? idia Hall.
Poleumita huntingtonensis (Kindle and Breger).
Poleumita huntingtonensis alternata (Kindle and Breger).
Poleumita plana (Kindle and Breger).
Protokionoceras medullare (Hall).
Protophragmoceras hercules carrollense (Kindle and Breger).
Reticularia proxima Kindle and Breger.
Rhipidomella circulus Hall.
Rhipidomella hybrida (Sowerby).
Rhynchonella colletti Miller.
Rhynchorthoceras dubium Hyatt.
Schizolopha(?) prosseri Kindle and Breger.
Schuchertella subplana (Conrad).
Sphærexochus romingeri Hall.
Spirifer (Delthyris) crispus Hisinger.
Spirifer (Delthyris) crispus simplex Hall.
Sprifer (Eospirifer) foggi (Nettelroth).
Spirifer (Eospirifer) nobilis (Barrande).
Spirifer (Eospirifer) radiatus (Sowerby).
Streptomytilus wabashensis Kindle and Breger.
Strophonella striata (Hall).
Strophonella williamsi Kindle and Breger.
Strophostylus cancellata (Hall).
Strophostylus elevatus Hall.
Trimeroceras gilberti Kindle and Breger.
Trochoceras desplainense McChesney.
Whitella(?) siluriana Kindle and Breger.
Whitfieldella nitida (Hall).
Wilsonia saffordi (Hall).

ARISAIG OF NOVA SCOTIA.

(Ross Brook=R.; McAdam=McA.; Moydart=M.; Stonehouse=S.)

Asaphus crypturus Green.
Atrypa reticularis Linnaeus (M., R., S.)
Atrypina intermedia (Hall).
Avicula lamellosa Dawson.
Beyrichia equilatera Hall. (S.)
Beyrichia pustulosa Hall. (S.)
Beyrichia tuberculata (Kloeden).
Beyrichia tuberculata nœtlingi (Reuter).
Beyrichia tuberculata strictispiralis Jones.
Bucanella trilobata (Hall). (McA.)
Camarotœchia æquiradiata (Hall).
Camarotœchia neglecta (Hall). (McA.)
Camarotœchia obtusiplicata (Hall). (McA.)
Chonetes novascoticus Hall. (M., S.)
Chonetes tenuistriatus Hall. (R., McA.)
Clidophorus concentricus Hall.
Clidophorus cuneatus Hall.
Clidophorus elongatus Hall.
Clidophorus erectus Hall.
Clidophorus nuculiformis Hall.
Clidophorus semiradiatus Hall.
Clidophorus subovatus Hall.
Cœlospira hemispherica (Sowerby). (R.)
Cornulites clintoni gracilis (Hall).
Cornulites distans Hall. (R.)
Cornulites proprius Hall. (M.)
Crania acadiensis Hall.
Ctenodonta? angustata (Hall).
Ctenodonta? attenuata (Hall).
Cytherodon? placidus Billings.
Cytherodon? socialis Billings.
Dalmanella elegantula (Dalman). (R., McA., M.)
Dalmanites logani (Hall.) (S.)
Discina fletcheri Ami.

Discina novascotica Ami.
Discina orientalis Ami.
Goniophora bellula Billings.
Goniophora consimilis Billings.
Goniophora mediocris Billings.
Goniophora transiens Billings. (S.)
Grammysia acadica Billings. (M., S.)
Grammysia remota Billings.
Grammysia rustica Billings. (S.)
Holopea reversa Hall.
Homalonotus dawsoni Hall. (M., S.)
Leperditia sinuata Hall.
Leptæna rhomboidalis (Wilckens). (R., S.)
Leptodesma rhomboidea (Hall). (R.)
Leptodomus (Sanguinolites) aratus Hall.
Megambonia cancellata Hall.
Megambonia stricta Hall.
Mesopalæaster parviusculus (Billings).
Modiolopsis exilis Billings.
Modiolopsis rhomboidea (Conrad).
Modiolopsis rude Billings.
Modiolopsis subnasuta Hall.
Monograptus clintonensis (Hall). (R.)
Monograptus priodon chapmanensis Ruedemann. (R.)
Murchisonia aciculata Hall.
Murchisonia arisaigensis Hall.
Nuculites (Orthonota) carinatus Dawson.
Orbiculoidea subplana (Hall).
Orthoceras elegantulum Dawson.
Orthoceras exornatum Dawson.
Orthoceras pictoense Dawson.
Orthoceras punctostriatum Hall.
Orthonota angulifera McCoy. (S.)
Orthonota incerta Billings.
Orthonota simulans Billings.
Orthonota speciosa Billings.
Orthonota venusta Billings.
Phacopidella downingiæ (Murchison). (R.)
Pholidops ovalis Hall. (McA., S.)
Pterinea emacerata (Hall). (A., M.)
Pterinea honeymani (Hall). (A.)
Pteronitella curta Billings. (S.)
Pteronitella oblonga Billings.
Pteronitella venusta Billings. (S.)
Retiolites geinitzianus venosus (Hall). (R.)
Rhynchospira(?) acadiæ (Hall).
Rhynchospira(?) sinuata Hall.
Schizotreta tenuilamellata (Hall). (R.)
Schuchertella subplana (Hall). (S.)
Serpulites longissimus Murchison. (M.)
Spirifer (Delthyris) crispus (Hisinger). (R.)
Spirifer (Delthyris?) rugicosta (Hall). (S.)
Spirifer (Delthyris) subsulcatus (Hall). (M., S.)
Stricklandinia billingsiana Dawson.
Stropheodonta(?) gilpeni (Dawson).
Tentaculites canadensis Ami.

NIAGARAN OF ARCTIC AMERICA.

Acervularia austini (Salter).
Acidaspis perarmata Whiteaves.
Actinoceras backi (Stokes).
Actinoceras keewatinense Whiteaves.
Actinoceras rotulatum (Billings). (Lake Temiscaming.)
Actinodictyon canadense Parks.
Actinodictyon keelei Parks.
Actinodictyon lowi Parks.
Actinodictyon neptuni Parks.
Actinostroma franklinense Parks.
Actinostroma tenuifilatum Parks.
Actinostroma tenuifilatum cylindricum Parks.
Actinostroma tenuifilatum inflatum Parks.
Alveolites arctica Woodward.
Alveolites undosus Miller. (Saskatchewan River).
Ambonychia septentrionalis Whiteaves.
Ambonychia undulata (Whitfield).
Amplexus fieldeni Etheridge.
Amplexus phragmoceras (Salter).
Aparchites billingsi (Jones).
Aphyllostylus gracilis Whiteaves.
Atrypa mansonii (Salter).
Bellerophon nautarum Salter.
Beyrichia clathrata Jones.
Beyrichia plagosa Jones.
Boreaster lowi Lambe.
Calapœcia borealis Whitfield.
Camarotœchia(?) coalescens Whiteaves.
Camarotœchia ekwanensis Whiteaves.
Caunopora hudsonica Dawson.
Chonetes striatellus (Dalman).
Clathrodictyon cystosum Parks.
Clathrodictyon cystosum cylindricum Parks.
Clathrodictyon cystosum lineatum Parks.
Clathrodictyon drummondense Parks.
Clathrodictyon striatellum (D'Orbigny).
Clathrodictyon vesiculosum minutum (Rominger).
Columnaria sutherlandi Salter.
Conchidium arcticum Holtedahl.
Conchidium biloculare Linnaeus.
Conchidium decussatum (Whiteaves).
Cyathophyllum articulatum (Wahlenberg).
Cyathophyllum pickthorni (Salter).
Cyrtoceras cordatum Parks.
Cyrtoceras(?) cuneatum Whiteaves.
Diaphorostoma perforatum Whiteaves.
Encrinurus lævis (Angelin).
Endoceras? ommaneyi Salter.
Favistella? franklini Salter.
Favistella reticulata Salter.
Fenestella subarctica Whiteaves.
Glassia variabilis Whiteaves.
Goldius aquilonaris (Whiteaves).
Goldius ekwanensis (Whiteaves).
Goldius flabellifer (Goldfuss).
Gypidula coppingeri (Etheridge).
Gyronema brevispira Whiteaves.
Gyronema dowlingii Whiteaves.
Gyronema speciosum Whiteaves.
Halysites agglomeratiformis Whitfield.
Halysites catenularia fieldeni Etheridge.
Halysites catenularia harti Etheridge.
Halysites parryi (Konig).
Helicotoma naresii Etheridge.
Heliolites megastoma (McCoy).
Heliolites perelegans Whitfield.
Ilionia? parvula Whiteaves.
Isochilina grandis latimarginata Jones (Saskatchewan River).
Leperditia arctica (Jones).
Leperditia cæca Jones (Saskatchewan River).
Leperditia gibbera Jones.
Leperditia hisingeri Schmidt.
Leperditia hisingeri egena Jones (Saskatchewan River).

Leperditia hisingeri fabulina Jones (Saskatchewan River).
Leperditia hisingeri gibbera Jones (Saskatchewan River).
Leperditia marginata Schmidt.
Leperditia whiteavesi Jones (Saskatchewan River).
Lissatrypa phoca (Salter).
Loxonema mcclintocki Haughton.
Loxonema rossi Haughton.
Loxonema salteri Haughton.
Lyellia affinis (Billings).
Lyellia superba (Billings).
Megalomphala robusta Whiteaves.
Meristina(?) expansa Whiteaves.
Monograptus convolutus coppingeri Etheridge.
Murchisonia? latifasciata Etheridge.
Mytilarca pernoides Whiteaves.
Phænopora keewatinensis Whiteaves.
Phragmoceras lineolatum Whiteaves.
Platyceras compactum Whiteaves.
Platyceras naticoides Etheridge.
Primitia muta Jones and Holl.
Primitia rugulifera (Jones).
Primitia sigillata (Jones).
Pterinea occidentalis Whiteaves.
Orthoceras articum Foord.
Orthoceras ekwanense Whiteaves.
Orthoceras griffithi Haughton.
Orthoceras imbricatum (Wahlenberg).
Orthonychia obtusa Whiteaves.
Receptaculites pearyi Whitfield.
Reticularia septentrionalis Whiteaves.
Rhynchonella nucula (Sowerby.)
Rhynchospira lowi Whiteaves (Faun River).
Salpingostoma boreale Whiteaves.
Spyroceras meridionale Whiteaves.
Streptelasma pygmæum occidentale (Whiteaves) (Saskatchewan River.)
Stromatopora amii Parks.
Stromatopora carteri Nicholson.
Stromatopora wilsoni Parks.
Strombodes gracile (Nicholson and Hinde).
Strophodonta acanthoptera (Whiteaves).
Strophodonta fieldeni Etheridge.
Strophomena? doneti Salter.
Strophomena(?) silluriana Davidson.
Strophonella euglypha (Hisinger).
Strophostylus canadensis Bassler.
Strophostylus filicinctus Whiteaves.
Strophostylus inflatus Whiteaves.
Syringophyllum organum (Linnæus).
Syringopora parallela Etheridge.
Syringopora verticillata Goldfuss.
Trimerella borealis Whiteaves.
Trimerella ekwanensis Whiteaves.
Tripleuroceras robsoni Whiteaves.
Trochoceras boreale Foord.
Trochoceras insigne Whiteaves.
Zaphrentis offleyenis Etheridge.

SILURIAN (PEMBROKE, EDMUNDS, AND EASTPORT FORMATIONS) OF MAINE.

Actinopteria bella Williams.
Actinopteria dispar Williams.
Actinopteria fornicata Williams.
Camarotœchia leightoni Williams.
Chonetes bastini Williams.
Chonetes cobscooki Williams.
Chonetes edmundsi Williams.
Cliopteria bicostata Williams.
Cliopteria unicosta Williams.
Dalmanella lunata (Sowerby).
Dalmanites lunatus Lambert (N. H.).
Eurymyella angularia Williams.
Eurymyella convexa Williams.
Eurymyella denbowensis Williams.
Eurymyella plana Williams.
Eurymyella recta Williams.
Eurymella shaleri Williams.
Eurymyella shaleri breva Williams.
Eurymyella shaleri longa Williams.
Eurymyella shaleri minor Williams.
Eurymyella? simulans Williams.
Grammysia pembrokensis Williams.
Grammysia triangulata (Salter).
Leiopteria rubra Williams.
Lingula minima americana Williams.
Modiolopsis leightoni Williams.
Modiolopsis leightoni quadrata Williams.
Nuculites corrugatus Williams.
Palæopecten cobscooki Williams.
Palæopecten danbyi (McCoy).
Palæopecten transversalis Williams.
Platyschisma helicites (Sowerby).
Pterinea laxota Williams.
Pterinea (? Tolmaia) trescotti Williams.
Streptotrochus carinatus Williams.
Streptotrochus ione Williams.
Streptotrochus regularis Williams.
Streptotrochus sulcatus Williams.
Stropheodonta (Brachyprion) shaleri (Williams).
Tolmaia campestris Williams.
Whitfieldella edmundsi Williams.

SILURIAN (NOVA SCOTIA, ETC.).

Actinostroma matutinum Nicholson.
Amplexus cingulatus Billings.
Camarotœchia winiskensis Whiteaves.
Ceratocephala goniata Warder.
Cheirurus tarquinius Billings.
Chonophyllum nymphale (Billings).
Ctenodonta subovata Whiteaves.
Cyathaspis acadica (Matthew).
Cyathophyllum interruptum Billings.
Cyathophyllum pasithea Billings.
Cyathophyllum pennanti Billings.
Cystiphyllum maritimum Billings.
Dictyonema splendens Billings.
Dictyonema websteri Dawson.
Favosites gaspensis Lambe.
Gomphoceras parvulum Whiteaves.
Gomphoceras subgracile Billings.
Gyroceras americanum Billings.
Halysites catenularia amplitubulata Lambe.
Halysites catenularia nitida Lambe.
Isochilina labrosa Jones.
Leperditia phaseolus (Hisinger).
Omphyma eriphyle (Billings).
Primitia æqualis Jones and Holl.
Stricklandinia gaspiensis Billings.
Syringopora bifurcata Lonsdale.
Syringopora compacta Billings.

CAYUGAN (KOKOMO) OF INDIANA.

Amplexus septatus Foerste.
Buthotrephis divaricata David White.
Buthotrephis newlini David White.
Chonetes colliculus Foerste.
Coelospira congregata (Kindle and Breger).
Conchidium colletti Miller.
Dalmanella elegantula Dalman.
Eurypterus (*Onychopterus*) *kokomoensis* Miller and Gurley.
Eurypterus ranilarva Clarke and Ruedemann.
Eusarcus newlini (Claypole).
Favosites pyriformis-kokomoensis Foerste.
Isochilina musculosa Foerste.
Kindenia kokomoensis Foerste.
Leptæna rhomboidalis Wilckens.
Pentamerus divergens Foerste.
Spirifer corallinensis Grabau.
Spirifer exiguus Foerste.
Stylonurus (*Drepanopterus*) **longicaudatus** Clarke and Ruedemann.
Whitfieldella erecta Foerste.
Wilsonia kokomoensis Foerste.

CAYUGAN OF APPALACHIAN VALLEY, NEW YORK AND ONTARIO.

(Cobleskill=C.; Akron=A.; McKenzie=Ma.; Bertie=B.; Pittsford=P.; Manlius=M.; Rondout=R.; New Bloomfield=N.)

Actinostroma tenuissimum Parks. (C.)
Atrypa reticularis Linnæus. (C.)
Bellerophon auriculatus Hall. (C.)
Beyrichia moodeyi Ulrich and Bassler. (Ma.)
Buthotrephis clavelloides (Grabau). (A.)
Buthotrephis lesquereuxi Grote and Pitt. (A.)
Calymene camerata Conrad. (C.)
Calymene niagarensis Hall. (C.)
Camarotœchia lamellata (Hall). (C.)
Camarotœchia litchfieldensis (Schuchert). (C.)
Ceratiocaris aculeata (Hall). (B.)
Ceratiocaris acuminata Hall. (B.)
Ceratiocaris maccoyana Hall. (B.)
Ceratiocaris (*Limnocaris*) *præcedens* Clarke. (P.)
Chonetes jerseyensis Weller. (C.)
Cœlocaulus obtusus (Hall). (C.)
Cœlocaulus terebralis (Hall). (C.)
Cornulites arcuatus Conrad. (C.)
Corydocephalus ptyonurus (Hall and Clarke.) (C.)
Ctenodonta equilatera (Hall). (C.)
Ctenodonta? nucleiformis (Hall). (M.)
Cyathophyllum hydraulicum Simpson. (A., M.)
Cyrtoceras subrectum Hall. (M.)
Diphyphyllum coralliferum (Hall). (C.)
Dolichopterus macrocheirus Hall. (B.)
Dolichopterus siluriceps Clarke and Ruedemann. (B.)
Dolichopterus(?) *testudineus* Clarke and Ruedemann. (B.)
Ectomaria? extenuata (Hall). (M.)
Ectomaria minuta (Hall). (M.)
Emmelezoe decora Clarke. (P.)
Enterolasma caliculus (Hall). (C.)
Eurypterus dekayi Hall. (B.)
Eurypterus lacustris Harlan. (B.)
Eurypterus lacustris pachycheirus (Hall). (B.)
Eurypterus microphthalmus Hall. (M.)
Eurypterus pittsfordensis Sarle. (P.)
Eurypterus pustulosus Hall. (B.)
Eurypterus remipes DeKay. (R., B.)
Eusarcus scorpionis Grote and Pitt. (B.)
Eusarcus vaningeni Clarke and Ruedemann. (P.)
Goniophora dubia (Hall). (M.)
Halysites catenularia Linnaeus. (C.)
Heliophyllum caliculoides Grabau. (M.)
Holopea? elongata Hall. (M.)
Hughmilleria socialis Sarle. (P.)
Hughmilleria socialis robusta Sarle. (P.)
Ilionia sinuata (Hall). (C., M.)
Leiopteria subplana (Hall). (C.)
Leperditia alta (Conrad).
Leperditia jonesi Hall. (C.)
Leperditia scalaris (Jones). (C., A.)
Leptæna rhomboidalis (Wilkens). (C.)
Limoptera limæformis (Hall). (C.)
Megambonia ovoidea Hall. (M.)
Mitroceras gebhardi (Hall). (A., C.)
Monotrypa?? spinosula Hall and Simpson. (M.)
Nematophycus crassus (Penhallow). (A.)
Onchus clintoni Claypole. (N.)
Onchus pennsylvanica (Claypole). (N.)
Oncoceras expansum Hall. (C.)
Oncoceras ovoides Hall. (M.)
Orbiculoidea numulus Hall and Clarke. (M.)
Orbiculoidea vanuxemi (Hall). (M.)
Palæaspis americana Claypole. (N.)
Pleurotomaria subdepressa Hall. (C.)
Prismatophyllum inæquale (Hall). (C.)
Prolucina galtensis (Whiteaves). (C.)
Proscorpius osborni (Whitfield). (B.)
Protokionoceras trusitum (Clarke and Ruedemann). (C.)
Pseudoniscus roosevelti Clarke. (P.)
Pterinea securiformis (Hall). (C., R.)
Pterinea subrecta (Hall). (C.)
Pterinea subrugosa (D'Orbigny).
Pterinopecten? obscurus (Hall). (M.)
Pterygotus buffaloensis Pohlman. (B.)
Pterygotus cobbi Hall. (B.)
Pterygotus cobbi juvenis Clarke and Ruedemann (B.)
Pterygotus (*Erettopterus*) *grandis* (Pohlman). (B.)
Pterygotus macrophthalmus Hall. (B.)
Pterygotus monroensis Sarle. (P.)
Schuchertella interstriata (Hall). (C., A., R.)
Spirifer (*Delthyris*) *corallinensis* (Grabau). (C., R.)
Spirifer (*Delthyris*) *eriensis* (Grabau). (C., A., R.)
Spirifer (*Delthyris*) *vanuxemi* Hall. (M.)
Spirorbis laxus Hall. (M.)
Straparollus sinuatus (Hall). (M.)
Stromatopora clarkei Parks. (C.)
Stromatopora constellata Hall. (C.)
Stropheodonta bipartita (Hall). (C.)
Stropheodonta varistriata (Conrad). (M.)
Stylonurus (*Ctenopterus*) *multispinosus* Clarke and Ruedemann. (P.)
Tentaculites gyracanthus (Eaton). (M.)
Trochoceras turbinatum Hall. (C.)
Whitfieldella(?) *nucleolata* (Hall). (A., C.)
Whitfieldella subsulcata Grabau. (A.)
Whitfieldella sulcata (Vanuxem). (A., M.)

SILURIAN OF SOUTH AMERICA.

(Brazil=B.; Bolivia=Bo.; Argentina=A.)

Anabaia paraia Clarke. (B.)
Anodontopsis austrina Clarke. (B.)
Anodontopsis putilla Clarke. (B.)
Arca browni Salter. (Bo.)
Beyrichia forbesi Jones. (Bo.)
Bollia lata brasiliensis Clarke. (B.)
Bucanella trilobata viro-mundo (Clarke). (B.)
Calymene macrophthalma D'Orbigny. (Bo.)
Calymene verneuilii D'Orbigny. (B.)
Clidophorus brazilianus Clarke. (B.)
Clitambonites adscendens (?Pander). (A.)
Conularia amazonica Clarke. (B.)
Cruziana rugosa D'Orbigny. (Bo.)
Ctenodonta clarkei Bassler. (B.)
Ctenodonta subrecta (Clarke). (B.)
Dalmanella freitana (Clarke). (B.)
Dalmanella smithi (Clarke). (B.)
Homalonotus linares Salter. (Bo.)
Lingula (*Palæoglossa*) *dubia* (D'Orbigny). (Bo.)
Lingula munsteri D'Orbigny. (Bo.)
Lingula submarginata D'Orbigny. (Bo.)
Lingulops derbyi Clarke. (A.)
Maclurites (?) *stelzneri* (Kayser). (A.)
Megalaspis? boliviensis (D'Orbigny). (Bo.)
Orbiculoidea hartii Clarke. (B.)
Orthis callactis amazonica Clarke. (B.)
Orthis humboldti D'Orbigny. (Bo.)
Orthis obtusa Pander. (A.)
Pholidops trombetana Clarke. (B.)
Symphysurus apolonista Lake. (Bo.)
Tentaculites saienzii Salter. (Bo.)
Tentaculites supremus Salter. (Bo.)
Tentaculites trombetensis Clarke. (B.)

LOWER MONROAN OF MICHIGAN, OHIO, AND ONTARIO.

(Greenfield=G.; Raisin River=R.; Put-in-Bay=P.)

Camarotœchia hydraulica (Whitfield). (G.)
Cyclostomiceras orodes (Billings). (R.)
Ectomaria minuta (Hall). (R.)
Eurypterus microthalmus Hall. (P.)
Goniophora dubia (Hall). (R., P.)
Hindella? (*Greenfieldia*) *rostralis* Grabau. (G.)
Hindella? (*Greenfieldia*) *whitfieldi* Grabau. (G.)
Klœdenia monroensis Grabau. (R.)
Leperditia angulifera Whitfield. (G.)
Leperditia ohioensis Bassler. (G.)
Meristina profunda Grabau. (R.)
Meristina profunda sinosus Grabau. (R.)
Pentamerus pesovis Whitfield. (?G.)
Pholidops ovata Hall. (R.)
Pterinea lanii Grabau. (R.)
Rhynchospira præformosa Grabau. (G.)
Schuchertella hydraulica (Whitfield). (R., G.)
Sphærococcites (?) *glomeratus* Grabau. (G., R.)
Spirifer (*Delthyris*) *ohioensis* (Grabau). (P.)
Spirorbis laxus Hall. (R.)
Whitfieldella rotundata (Whitfield). (G.)
Whitfieldella subsulcata Grabau. (G.)

UPPER MONROAN OF MICHIGAN AND ONTARIO (?Helderbergian).

(Amherstburg=A.; Lucas=L.; Anderdon=An.)

Acanthonema holopiforme Grabau. (A., L.)
Acanthonema holopiforme obsoletum Grabau. (L.)
Acanthonema laxum Grabau. (A., L.)
Acanthonema newberryi Meek. (L.)
Atrypa reticularis Linnaeus. (A.)
Camarotœchia semiplicata (Conrad). (L.)
Ceratopora regularis Grabau. (A.)
Ceratopora tenella (Rominger). (An.)
Cladopora bifurcata Grabau. (A., An., L.)
Cladopora cervicornis Hall. (?A.)
Clathrodictyon ostiolatum (Nicholson). (An., A.)
Clathrodictyon variolare (Von Rosen). (An.)
Conocardium monroicum Grabau. (A., An. L.)
Cornulites arcuatus Conrad. (A.)
Cyathophyllum thoroldense Lambe. (An.)
Cyclostomiceras orodes (Billings). (A.)
Cylindrohelium heliophylloides Grabau. (L.)
Cylindrohelium profundum Grabau. (L.)
Cypricardinia canadensis Grabau. (A.)
Cystiphyllum americanum anderdonense Grabau. (A., An.)
Dawsonoceras annulatum (Sowerby). (A.)
Diphyphyllum integumentum (Barrett). (A., An.)
Diphyphyllum? multicaule (Hall). (A.)
Ectomaria? extenuata (Hall). (L.)
Ectomaria minuta (Hall). (L.)
Eotomaria areyi Clarke and Ruedemann. (A., L.)
Eotomaria galtensis (Billings). (L).
Euomphalopterus valeria (Billings). (L.)
Euomphalus fairchildi Clarke and Ruedemann. (L.)
Favosites basalticus nanus Grabau. (An.)
Favosites concavus Grabau. (An.)
Favosites rectangularis Grabau. (An.)
Favosites tuberoides Grabau. (A.)
Heliophrentis alternata Grabau. (A.)
Heliophrentis alternata compressa Grabau. (A.)
Heliophrentis alternata magna Grabau. (A.)
Heliophrentis carinata Grabau. (A.)
Helenterophyllum caliculoides Grabau. (An.)
Hercynella canadensis Grabau. (A.)
Holopea antiqua pervetusta Hall. (A.)
Holopea subconica Hall. (L.)
Hormotoma subcarinata Grabau. (A., L.)
Hormotoma tricarinata Grabau. (L.)
Idiostroma nattressi Grabau. (An.)
Lophospira bispiralis (Hall). (A., L.)
Loxonema parva Grabau. (L.)
Meristospira michiganensis Grabau. (A.)
Panenka canadensis Whiteaves. (A.)
Pleuronotus subangulatus Grabau. (L.)
Pleurotrochus tricarinatus Grabau. (L.)
Poleumita crenulata (Whiteaves). (L.)
Poterioceras sauridens Clarke and Ruedeman. (A.)
Proetus crassimarginatus Hall. (A.)
Protokionoceras trusitum (Clarke and Ruedemann). (L).
Pterinea bradti Grabau. (L.)
Reticularia (*Prosserella*) *lucasi* (Grabau). (L.)
Reticularia (*Prosserella*) *modestoides* (Grabau). (A., An.)
Reticularia (*Prosserella*) *modestoides depressus* (Grabau). (A.)
Reticularia (*Prosserella*) *planisinosa* (Grabau). (L.)
Reticularia (*Prosserella*) *subtransversa* (Grabau). (A.)
Reticularia (*Prosserella*) *subtransversa alta* (Grabau). (A.)
Reticularia (*Prosserella*) *unilamellosa* (Grabau). (L.)
Romingeria umbellifera (Billings). (A.)
Schuchertella amherstburgensis Grabau. (A.)

Schuchertella interstriata (Hall). (A.)
Spirifer (*Delthyris*) *modestus* (Hall). (L.)
Spirifer (*Delthyris*) *sulcatus submersus* (Grabau). (A.).
Stromatopora galtensis Dawson. (A.)
Stromatopora (*Cœnostroma*) *pustulosum* Grabau. (An.)
Strophodonta demissa homolostriata Grabau. (A.)
Strophodonta præplicata Grabau. (A.)
Strophodonta [illegible] Grabau. (A.)
Stylodictyon sherzeri Grabau. (An.)
Syringopora cooperi Grabau. (F.)
Syringopora hisingeri Billings. (A., F.)
Syringopora microfundulus Grabau. (An.)
Trochoceras andromache Grabau. (A.)
Trochonema ovoides Grabau. (A., L.)
Whitfieldella prosseri Grabau. (B.)

HELDERBERGIAN (LOWER BEDS) OF APPALACHIAN VALLEY.

(Keyser—K.; Decker Ferry—D.)

Actinopteria communis (Hall). (K.)
Actinopteria reticulata Weller. (D.)
Amphicœlia ulrichi Maynard. (K.)
Anomalocystites cornutus Hall.
Aparchites gordoni Ulrich and Bassler. (K.)
Ascodictyon siluriense Vine. (K.)
Atrypa? biconvexa Maynard. (K.)
Atrypa? reticularis (Linnaeus).
Aulopora schoharie Hall. (K.)
Aulopora schucherti Swartz. (K.)
Aviculopecten tenuilamellatus (Hall). (K.)
Batostomella interporosa Ulrich and Bassler. (K.)
Bellerophon helderbergiæ Maynard. (K.)
Bythocypris nearpassi Weller. (D.)
Bythocypris punctulata arcuata Ulrich and Bassler. (K.)
Calymene camerata Conrad. (K.)
Calymene rugosa Shumard.
Camarocrinus stellatus Hall. (K.)
Camarotœchia gigantea Maynard. (K.)
Camarotœchia hudsonia Grabau. (D.)
Camarotœchia lamellata (Hall.) (D., K.)
Camarotœchia litchfieldensis Schuchert. (D., K.)
Camarotœchia litchfieldensis angustata Holtedahl.
Camarotœchia semiplicata Grabau.
Centronella? biplicata Weller. (K.)
Ceramopora incondita Ulrich and Bassler. (K.)
Ceratopora? marylandica Swartz. (K.)
Chilotrypa micropora Ulrich and Bassler. (K.)
Chonetes jerseyensis Weller. (D.)
Chonetes jerseyensis spinosus Maynard. (K.)
Cladopora multiseriata Weller. (K.)
Cladopora rectilineata Simpson. (D.)
Clidochirus keyserensis Springer. (K.)
Cœlospira concava tonolowayensis (Swartz). (K.)
Columnaria? helderbergiæ Swartz. (K.)
Cordylocrinus plumosus (Hall).
Cornulites cingulatus Hall. (K.)
Ctenobolbina denticula Ulrich and Bassler. (K.)
Ctenobolbina? dubia Ulrich and Bassler. (K.)
Cyathophyllum clarki Swartz. (K.)
Cyathophyllum marylandicum Swartz. (K.)
Cyathophyllum radicula Rominger. (K.)
Cyathophyllum schucherti Swartz. (K.)
Cyphotrypa corrugata (Weller). (D., K.)
Cypricardinia lamellosa Hall. (K.)
Dalmanella clarki Maynard. (K.)
Dalmanella concinna (Hall). (K.)
Dalmanella postelegantula Weller. (D.)
Dalmanites aspinosa Weller. (D., K.)
Dalmanites keyserensis Swartz. (K.)
Diaphorostoma niagarensis (Hall).
Dimerocrinus arborescens (Talbot).
Diphyphyllum integumentum (Barrett). (D.)
Diplostenopora siluriana (Weller.) (D.)
Edmondia? deckerensis Weller. (D.)
Eridotrypa parvulipora Ulrich and Bassler. (K.)
Favosites corrugatus Weller. (D.)
Favosites favosus integritabulatus Swartz. (K.)
Favosites helderbergiæ præcedens Schuchert. (K.)
Favosites pyriformis (Hall). (D.)
Fenestella (*Cycloporina*) *altidorsata* Ulrich and Bassler. (K.)
Fenestella cumberlandica Ulrich and Bassler. (K.)
Fistuliporella cumulata Ulrich and Bassler. (K.)
Fistuliporella marylandica Ulrich and Bassler. (K.)
Fistuliporella maynardi Ulrich and Bassler. (K.)
Fistuliporella minima Ulrich and Bassler. (K.)
Fistuliporella quinquedentata Ulrich and Bassler. (K.)
Frammia dissimilis Holtedahl.
Grammysia arctica Bassler.
Gypidula (*Sieberella*) *coeymanensis corriganensis* Maynard. (K.)
Gypidula (*Sieberella*) *coeymanensis prognostica* Maynard. (K.)
Gypidula subglobosa Maynard. (K.)
Halliella? seminulum longa Ulrich and Bassler. (K.)
Halliella triplicata Ulrich and Bassler. (K.)
Halysites catenularia Linnaeus.
Heliolites inordinata (Lonsdale).
Hindia sphæroidalis Duncan.
Hyattidina lamellosa (Weller).
Jækelocystis avellana Schuchert. (K.)
Jækelocystis hartleyi Schuchert. (K.)
Jækelocystis papillatus Schuchert. (K.)
Klœdenella barretti (Weller). (K.)
Klœdenella clarkei (Jones).
Klœdenella clarkei paupera Ulrich and Bassler. (K.)
Klœdenella halli (Jones).
Klœdenella pennsylvanica (Jones). (K.)
Klœdenella trisulcata (Hall).
Klœdenella turgida Ulrich and Bassler. (K.)
Klœdenia barreti (Weller). (D., K.)
Klœdenia centricornis Ulrich and Bassler. (K.)
Klœdenia fimbriata Ulrich and Bassler. (K.)
Klœdenia jerseyensis (Weller). (D.)
Klœdenia kummeli (Weller). (K.)
Klœdenia manliensis Weller. (K.)
Klœdenia manliensis deckerensis (Weller). (D.)
Klœdenia montaguensis (Weller). (M.)
Klœdenia nearpassi (Weller). (D., K.)
Klœdenia notata (Hall).
Klœdenia smocki (Weller). (M.)
Klœdenia sussexensis (Weller). (D., K.)
Klœdenia wallpackensis (Weller). (M.)
Lasiocrinus scoparius (Hall).
Leiopteria subplana (Hall). (K.)
Leperditia alta (Conrad).
Leperditia altoides Weller. (K., D.)

Leperditia elongata Weller. (K.)
Leperditia symmetrica Holtedahl.
Lepocrinites gebhardi Conrad.
Lepocrinites manlius Schuchert. (K.)
Leptæna rhomboidalis (Wilkins). (D.)
Lioclema pulchellum Ulrich and Bassler. (K.)
Lioclema subramosum Ulrich and Bassler. (K.)
Lissatrypa scheii Holtedahl.
Loxonema fitchi Hall.
Mariacrinus beecheri Talbot.
Megambonia aviculoidea Hall.
Melocrinus nobilissimus (Hall).
Melocrinus pachydactylus (Conrad).
Merista typa (Hall). (K.)
Meristella prænuntia Schuchert and Maynard. (K.)
Mesomphalus hartleyi Ulrich and Bassler. (K.)
Mesomphalus submarginata Ulrich and Bassler. (K.)
Monotrypella? arbuscula (Hall).
Mytilarca obliqua Weller. (D.)
Nucleospira elegans Hall. (K.)
Nucleospira swartzi Maynard. (K.)
Nucleospira ventricosa (Hall). (K.)
Octonaria? angulata Ulrich and Bassler. (K.)
Octonaria inæqualis Ulrich and Bassler. (K.)
Octonaria simplex (Krause). (K.)
Orbiculoidea schucherti Swartz. (K.)
Orthoceras rigidum Hall. (K.)
Othoceras schucherti Maynard. (K.)
Pachydomella longula Ulrich and Bassler. (K.)
Parallelopora favositiformis Holtedahl.
Pentamerus circularis Weller. (D.)
Pholidops ovata Hall. (D., K.)
Platyceras ellesmerelandi Holtedahl.
Polypora dictyota Ulrich and Bassler. (K.)
Pontocypris arcuata Ulrich and Bassler. (K.)
Pontocypris mawi breviata Jones. (K.)
Primitia arctica Holtedahl.
Primitia cumberlandica Ulrich and Bassler. (K.)
Prismatophyllum inæquale (Hall). (K., D.)
Protaxocrinus virginiensis Springer. (K.)
Proetus depressus Weller. (D.)
Proetus leptorhachis Holtedahl.
Proetus pachydermatus Barrett. (D., K.)
Proetus spinosus Weller. (D.)
Pseudocrinites abnormalis Schuchert. (K.)
Pseudocrinites clarki Schuchert. (K.)
Pseudocrinites claypolei Schuchert. (K.)
Pseudocrinites elongatus Schuchert. (K.)
Pseudocrinites gordoni Schuchert. (K.)
Pseudocrinites perdewi Schuchert. (K.)
Pseudocrinites stellatus Schuchert. (K.)
Pseudocrinites subquadratus Schuchert. (K.)
Pterinea emacerata (Conrad). (D.)
Pterinea textilis (Hall).
Ptilodictya frondosa Weller. (D.)
Ptilodictya tenella Ulrich and Bassler. (K.)
Ptychopteria? subquadrata Weller. (D.)
Pycnosaccus tenuibrachiatus Springer. (K.)
Rensselæria keyserensis Swartz. (K.)
Rensselæria mutabilis (Hall). (K.)
Rensselæria (Beachia) proavita Schuchert. (K.)
Reticularia bicostata (Vanuxem). (D., K?)
Rhipidomella emarginata (Hall). (K.)
Rhipidomella preoblata Weller. (D.)
Rhopalonaria attenuata Ulrich and Bassler. (K.)
Rhynchospira excavata Grabau. (K.)
Rhynchospira formosa (Hall). (D., K.)
Rhynchospira globosa (Hall). (K.)
Rhynchotrema deckerense (Weller). (D., K.)
Rhynchotrema deckerense arcticum (Holtedahl).
Rhynchotrema formosum (Hall). (K.)
Schuchertella deckerensis (Weller). (D., K?)
Schuchertella deformis (Hall). (K.)
Schuchertella interstriata (Hall). (D.)
Schuchertella interstriata sinuata Holtedahl.
Schuchertella marylandica Maynard. (K.)
Schuchertella prolifica Schuchert and Maynard. (K.)
Schuchertella sinuata (Hall and Clarke). (K.)
Semicoscinium planum Ulrich and Bassler. (K.)
Sphærocystites bloomfieldensis Schuchert. (K.)
Sphærocystites globularis Schuchert. (K.)
Sphærocystites globularis ovalis Schuchert. (K.)
Sphærocystites multifasciatus Hall. (K.)
Spirifer (Delthyris) corallinensis (Grabau). (D., K.)
Spirifer (Delthyris) eriensis (Grabau). (K.)
Spirifer (Delthyris) modestus (Hall). (K.)
Spirifer (Delthyris) modestus plicatus (Maynard). (K.)
Spirifer (Delthyris) modestus striatissimus Holtedahl.
Spirifer (Delthyris) octocostatus (Hall). (K.)
Spirifer (Delthyris) vanuxemi Hall. (K.)
Spirifer (Delthyris) vanuxemi minor (Weller). (D.)
Spirifer (Delthyris) vanuxemi prognosticus (Schuchert). (K.)
Stenopora(?) incrustans Ulrich and Bassler. (K.)
Strepula irregularis Jones and Holl. (K.)
Stromatopora constellata Hall. (K.)
Stromatopora corallifera Parks.
Stromatotrypa globularis Ulrich and Bassler. (K.)
Stropheodonta bipartita (Hall). (D., K.)
Stropheodonta patersoni antiqua Holtedahl.
Stropheodonta varistriata (Conrad). (D., K.)
Strophonella geniculata (Hall). (K.)
Strophonella keyserensis Swartz. (K.)
Syringopora bifurcata Lonsdale.
Syringopora dalmanii Billings.
Syringostroma barretti Girty. (K.)
Syringostroma centrotum Girty. (K.)
Tentaculites gyracanthus (Eaton).
Tetracystis chrysalis Schuchert. (K.)
Thamniscus regularis Ulrich and Bassler. (K.)
Trimerocystis peculiaris Ulrich and Bassler. (K.)
Uncinulus convexorus Maynard. (K.)
Uncinulus gordoni Maynard. (K.)
Uncinulus keyserensis Schuchert and Maynard. (K.)
Uncinulus nucleolatus (Hall). (K.)
Uncinulus nucleolatus angulatus Maynard. (K?)
Uncinulus septentrionalis Holtedahl.
Whitfieldella lævis (Vanuxem).
Whitfieldella(?) minuta Maynard. (K.)
Whitfieldella(?) nucleolata (Hall). (K.)
Whitfieldella prosseri Grabau. (K.)
Wilsonia globosa Weller. (D., K.)
Zaphrentis keyserensis Swartz. (K.)

LIST OF AMERICAN ORDOVICIAN AND SILURIAN FORMATIONS.

Akron dolomite, Upper Cayugan, New York, etc.

Albion group or stage, Upper Medinan.

Albion sandstone, Upper Medinan, New York, etc.

Alexandrian series, Upper Medinan, Illinois and Missouri.

Alger formation, Clinton, eastern Kentucky.

Allentown limestone, Upper Cambrian or Ozarkian, Pennsylvania.

Ames Knob formation, Silurian, Maine.

Amherst feldspathic mica schist, Silurian?, New England

Amherstburg dolomite, Upper Monroan, Michigan and Ontario.

Amsterdam limestone, Black River, New York, etc.

Anamosa limestone, Cayugan, Illinois and Iowa.

Anderdon limestone, Upper Monroan, Michigan and Ontario.

Anticostian series, Silurian, Quebec.

Aquashicola formation, Silurian, Pennsylvania.

Arbuckle limestone, Big Buffalo series, Oklahoma.

Arisaig series, Silurian, Nova Scotia.

Arnheim (Warren) formation, Richmond, Ohio Valley, etc.

Aroostook limestone, Silurian, Maine.

Arthrophycus sandstone, Upper Medinan, New York, etc.

Ashland shale, Silurian, Maine.

Athens shale, Blount group, Tennessee and Virginia.

Atkinson. *See* Fort Atkinson.

Attalla conglomerate member, Chazyan, Alabama.

Auburn chert, Black River, Missouri.

Auroral=Canadian-Black River, Pennsylvania.

Austin Brook quartz porphyry, Post Ordovician, New Brunswick.

Avondale limestone, Cambrian-Ordovician(?), Pennsylvania.

Axeman limestone, Canadian, Pennsylvania.

Aylmer formation, Chazyan, Quebec.

Bainbridge limestone, Niagaran, Missouri.

Bakers limestone (=Brassfield), Upper Medinan, Tennessee.

Bald Eagle conglomerate, Cincinnatian, Pennsylvania.

Bald Mountain limestone, Canadian, New York.

Baltimore gneiss, Ordovician, Pennsylvania.

Barnegat limestone, Cambrian-Ordovician, New York.

Barree group, Silurian, Pennsylvania.

Bass Island series, Lower Monroan, (Cayugan), Michigan, etc.

Baxters Brook formation, Lower Ordovician, Nova Scotia.

Bays sandstone, Trenton, East Tennessee.

Beauharnois formation, Canadian (=Division D of Beekmantown), Quebec and Ontario.

Beaver division, Silurian(?), Texas.

Beavertown marl (division of Brassfield), Upper Medinan, Ohio.

Becsie River formation, Anticostian, Anticosti Island, Quebec.

Beech Hill Cove formation; Niagaran, Nova Scotia.

Beech River formation, Upper Niagaran, west Tennessee.

Beekmantown (Calciferous) limestone, Canadian, New York, etc.

Belfast bed (Elkhorn), Richmond, Ohio Valley.

Belledune group, Silurian, New Brunswick.

Bellefonte limestone, Canadian, Pennsylvania.

Bellevue member, Maysville, Ohio Valley.

Bellowspipe quartzite, Silurian?, Massachusetts.

Beloit dolomite, Black River, Wisconsin, etc.

Benson limestone, Trenton, Kentucky.

Berkshire schist, Ordovician(?), Connecticut.

Bertie waterlime, Upper Cayugan, Canada and New York.

Bertram beds, Silurian, Iowa.

Bib dolomite, Ozarkian, Alabama.

Big Buffalo series, Lower Ordovician.

Bigby limestone, Trenton, Tennessee, Kentucky, and Virginia.

Big Fork chert, Trenton, Arkansas.

Big Horn dolomite, Black River and Richmond, Wyoming.

Binnewater sandstone, Cayugan, New York.

Birch Creek schist, Pre-Ordovician, Alaska.

Bird Mountain grit, Ordovician, Vermont.

Birdseye limestone (=Lowville) Black River, New York, etc.

Black River group, Lower Mohawkian.

Blakeley sandstone (=St. Peter), Big Buffalo Series, Arkansas.

Blanchester division (of Waynesville) Richmond, Ohio Valley.

Blaylock sandstone, Upper Medinan, Arkansas.

Bledsoe limestone (=Louisville), Upper Niagaran, Tennessee.

Bloomsburg red sandstone, Upper Cayugan, Pennsylvania, Maryland, etc.

Blount group, Upper Chazyan.

Bluff limestone, Mohawkian, Wisconsin.

Bob formation, Upper Niagaran, West Tennessee.

Bolin Creek sandstone member of Elizabeth formation (=Roubidoux), Canadian, Missouri.

Bossardville limestone, Upper Cayugan, New York and New Jersey.

Bowling Green dolomite, Upper Medinan, Missouri, etc.

Bradford schist, Ordovician, Vermont.

Brainard shales, Upper Medinan, Iowa.

Brannon division of Flanagan, Trenton, Kentucky.

Brassfield limestone, Upper Medinan, Ohio Valley, etc.

Brayman shales, Cayugan, New York.

Bretonian, Canadian, Nova Scotia.

Briarfield dolomite, Upper Cambrian or Ozarkian, Alabama.

Bridgeport sandstone, Silurian, Pennsylvania.

Brimfield schist, Silurian?, Massachusetts.

Bromide formation, Black River, Oklahoma.

Bromley shale of Cynthiana, Trenton, Kentucky, etc.

Brown's Mountain group, Lower Ordovician, Nova Scotia.

Brownsport bed, Niagaran, West Tennessee.

Bryant limestone, Black River, Missouri.

Buff limestone. *See* Upper Buff and Lower Buff.

Buffalo shales, Richmond, Iowa.

Bullhead dolomite (=Akron), Upper Cayugan, New York, etc.

Burden conglomerate, Middle Ordovician, New York.

Burgen sandstone, Lower Ordovician, Oklahoma.

Byron beds, Niagaran, Wisconsin.

Cabot Head beds, Upper Medinan, Ontario.

Cacapon sandstone, Lower Niagaran, West Virginia, etc.

Caddo shale, Lower Ordovician, Arkansas.

Calciferous limestone (=Beekmantown) Canadian, New York, etc.

Camillus shale, Lower Cayugan, New York.

Camp Nelson limestone, Stones River, Kentucky.

Canaan dolomite, Ordovician (?), Massachusetts.

Canajoharie shale, Trenton, New York.

Cannon limestone, Trenton, Tennessee.

Cap-au-Gres sandstone (=St. Peter), Big Buffalo series, Missouri.

Cape Canon massive, Ordovician, Quebec.

Cape Girardeau limestone. *See* Girardeau.

Capitol limestone (=Bigby), Trenton, Tennessee.

Cardiff quartzite, Ordovician (?), Maryland.

Carters Creek limestone (=Lowville), Black River, Tennessee.

Carters limestone. *See* Carters Creek limestone.

Cason shale, Richmond, Arkansas.

Cassin formation (=division E and upper part of D of Beekmantown), Canadian, Vermont and New York.

Cat Head limestone, Black River or Richmond, Manitoba.

Cataract formation, Upper Medinan, Ontario and New York.

Catheys formation, Trenton, Tennessee, Kentucky, etc.

Cayugan series or epoch, Silurian.

Cedarville dolomite. Upper Niagaran, Ohio.

Central limestone (=Murfreesboro), Stones River, Tennessee.

Chambersburg formation, Chazyan-Mohawkian, Pennsylvania, Maryland, and Virginia.

Champlainic (=Ordovicic) system.

Channahon limestone, Upper Medinan, Illinois, etc.

Charette limestone, Middle Ordovician, Missouri.

Charleton formation, Richmond, Anticosti Island, Quebec.

Chazy shales (=Aylmer), Chazyan, Canada.

Chazyan series or epoch, Lower Ordovician.

Chepultepec limestone, Ozarkian, Alabama.

Chester amphibolites, Ordovician (?), Massachusetts.

Chicago group. *See* Lockport.

Chickamauga limestone, Stones River to Cincinnatian, Tennessee, Alabama, etc.

Chicotte formation, Anticostian, Anticosti Island, Quebec.

Chimneyhill limestone, Upper Medinan, Oklahoma.

Cincinnatian series or epoch, Upper Ordovician.

Citadel series, Quebec group, Canada.

Clarksville division (of Waynesville), Richmond, Ohio Valley.

Clermont shale, Richmond, Iowa and Minnesota.

Cliff limestone, Niagaran, Ohio Valley.

Clifton limestone, Niagaran, West Tennessee.

Clinch Mountain sandstone See Clinch.

Clinch sandstone, Upper Medinan, Tennessee and Virginia.

Clinton group or stage, Lower Niagaran.

Cloche Island beds, Black River, Ontario.

Cobequid series, Silurian, Nova Scotia.

Cobleskill (Coralline) waterlime, Upper Cayugan, New York.

Cobscook (Bay) series, Silurian, Maine.

Cockeysville marble, Cambrian-Ordovician, Maryland.

Cococonk limestone, Ordovician, Ontario.

Codorus limestone, Ordovician, Pennsylvania.

Coggan beds, Silurian, Iowa.

Colesburg terrane, Silurian, Iowa.

College Hill limestone, Maysville, Central Tennessee.

Collingwood black shales, Trenton, Ontario.

Conococheague limestone, Upper Cambrian or Ozarkian, Pennsylvania, Maryland, etc.

Conway schist, Ordovician (?), Massachusetts.

Coos series, Silurian (?), New Hampshire.

Coplay limestone, Canadian, Pennsylvania.

Copper Ridge chert, Ozarkian, Virginia and Tennessee.

Coral beds (Upper and Lower) Niagaran, Wisconsin.

Coralline limestone (=Cobleskill) Silurian, New York.

Cornishville member of Perryville, Trenton, Kentucky.

Cornwall limestone, Silurian, New York.

Corryville beds, Maysville, Ohio Valley.

Cotter limestone, Canadian, Arkansas.

Covington group, =Cincinnatian.

Crab Orchard formation, Clinton, Eastern Kentucky.

Croasdale quartzite, Silurian, New Jersey.

Crown Point limestone, Chazyan, New York.

Crystal City sandstone (=St. Peter) Big Buffalo series, Missouri.

Cumberland Head shale, Trenton, New York.

Cumberland sandstone, Richmond, Kentucky.

Curdsville limestone, Trenton, Kentucky, Tennessee and Ontario.

Cynthiana formation, Trenton, Ohio Valley.

Cyrene member of Edgewood, Upper Medinan, Illinois and Missouri.

Dadina schist, Pre Silurian, Alaska.

Damourite slate, Silurian, Pennsylvania.
Day Point limestone, Chazyan, New York.
Dayton limestone, Clinton, Ohio.
Decatur limestone, Lower Cayugan, Tennessee and Oklahoma.
Decew member of Lockport, Upper Niagaran, New York, etc.
Decker Ferry limestone, Helderbergian, New York, etc.
Decker limestone. *See* Decker Ferry.
Decorah shale, Black River, Iowa, Minnesota, etc.
Deep Creek division of San Saba series, Silurian (?), Texas.
Deepkill shale, Canadian, New York.
Delaware stage, Niagaran (preoccupied). *See* Hopkinton.
Dennys formation, Silurian, Maine.
Depauville waterlime (=Pamelia) Stones River, New York.
Detroit River series, Upper Monroan, Michigan and Ontario.
Dixon formation, Upper Niagaran, west Tennessee.
Dolgeville shale, Trenton, New York.
Dorset limestone, Silurian (?), Vermont.
Dubuque dolomite, Richmond, Missouri and Iowa.
Eastport formation, Silurian, Maine.
Economy member of Eden, Ohio Valley.
Eden shale, Lower Cincinnatian, Ohio Valley, New York, etc.
Edgewood limestone, Upper Medinan, Illinois and Missouri.
Edmunds formation, Silurian, Maine.
Egremont limestone, Ordovician, Massachusetts.
Elevator sandstone included in Shakopee, Canadian, Minnesota.
Elgin shaly limestone, (=Fort Atkinson) Richmond, Iowa.
Elizabeth formation (=Roubidoux) Canadian, Missouri.
Elkhorn division, Richmond, Indiana and Ohio.
Ellenberger limestone, Cambrian-Ordovician, Texas.
Ellis Bay formation, Richmond, Anticosti Island, Quebec.
Elmtree slates, Silurian, New Brunswick.
El Paso limestone, Canadian, Texas and New Mexico.
Eminence chert, Ozarkian, Missouri.
English Head formation, Richmond, Anticosti Island, Quebec.
Eolian limestone, Cambro-Ordovician, Vermont.
Escanaba, Ordovician, Michigan.
Essex limestone, Upper Medinan, Illinois and Missouri.
Estill (?) clay, Clinton, eastern Kentucky.
Eureka quartite, Middle Ordovician, Nevada and California.
Everett schist, Ordovician, Massachusetts.
Everton limestone, Big Buffalo series, Arkansas and Missouri.
Fairmount beds, Maysville, Ohio Valley, etc.
Fairview formation, Maysville, Ohio Valley, etc.
Farnham formation, Mohawkian, Quebec.
Faulconer division of Perryville, Trenton, Kentucky.
Fernvale limestone, Richmond, Illinois, Missouri, Tennessee, and Colorado.
Fish Haven dolomite (=Fernvale), Richmond, Utah.
Fishkill limestone, Cambrian-Ordovician, New York.
Flades clay, Clinton, eastern Kentucky.
Flanagan chert, Trenton, Kentucky, Tennessee, and Virginia.
Flat Rock dolomite, Upper Monroan, Michigan.
Folley limestone, Black River, Missouri.
Fort Ancient division (of Waynesville), Richmond, Ohio Valley.
Fort Atkinson limestone, Richmond, Iowa, and Minnesota.
Fournier group, Ordovician-Devonian, New Brunswick.
Fowler limestone (=Saluda), Richmond, Kentucky.
Frankfort shale, Cincinnatian, New York.
Fremont limestone, Black River (Kimmswick) and Richmond, Colorado.
Fulton shale, Eden, Ohio and Kentucky.
Furnaceville iron-ore formation, Clinton, New York.
Fusselman limestone, Upper Niagaran, Texas.
Galena dolomite, Trenton, Upper Mississippi Valley.
Gamachian (Richmond), Anticosti Island, Quebec.
Gant bed, Niagaran, west Tennessee.

Garden City limestone, Canadian, Utah.

Garrard sandstone, Eden, Kentucky.

Gasconade limestone, Ozarkian, Missouri.

Gasport limestone member, Upper Niagaran, New York.

Gilbert member, Maysville, Kentucky.

Girardeau limestone, Upper Medinan, Illinois and Missouri.

Glade limestone (=Lebanon), Stones River, Tennessee.

Glen Falls limestone, Trenton, New York.

Glencoe marble (Galena), Mohawkian, Illinois.

Glens Falls black marble, Silurian, Arkansas.

Glenkirk limestone, Niagaran, west Tennessee.

Glenwood shales, base of Platteville, Iowa and Minnesota.

Goodsir formation, Canadian, British Columbia.

Goshen schist, Ordovician (?), Massachusetts.

Gower formation, Cayugan, Illinois and Iowa.

Grand Rapids sandstone (=Sylvania), Monroan, Ohio, etc.

Granville serpentines, Ordovician (?), Massachusetts.

Gratz shale (of Cynthiana), Trenton, Kentucky.

Gray sandstone (of Oswego), Silurian, New York.

Greendale bed (of Cynthiana), Trenton, Kentucky.

Greenfield dolomite, Upper Cayugan, Ohio and Michigan.

Green Pond conglomerate, Upper Medinan, New Jersey and New York.

Greylock schist, Ordovician (?), Massachusetts.

Grimsby sandstone, Upper Medinan, Ontario.

Grizzly formation, Silurian, California.

Guelph dolomite, Niagaran, Ontario, New York, Michigan, etc.

Gun River formation, Anticostian, Anticosti Island, Quebec.

Gunter sandstone (member of Gasconade) Ozarkian, Missouri.

Hancock limestone, Cayugan, east Tennessee.

Harding sandstone, Black River (just below Kimmswick limestone), Colorado.

Hardwick gneiss, Ordovician(?), Massachusetts.

Hartwick terrane, Silurian, Iowa.

Hawley schist, Ordovician(?), Massachusetts.

Heiskell shale, Upper Chazyan, Virginia and Tennessee.

Henryhouse shale, Niagaran, Oklahoma.

Hermansville limestone, Cambrian-Ordovician, Michigan.

Hermitage limestone, Trenton, Tennessee and Kentucky.

Highbridge limestone, Stones River-Black River, Kentucky.

High Falls shale, Lower Cayugan, New York and New Jersey.

Hillsboro sandstone, Upper Cayugan, Ohio.

Hinton division of San Saba series, Silurian(?), Texas.

Hitz layer of Saluda, Richmond, Indiana.

Holland sandstone (=Sylvania), Monroan, Ohio.

Holston marble, Blount group, Tennessee and Virginia.

Hoosac schists, Ordovician, Massachusetts.

Hoover division, Silurian(?), Texas.

Hopkinton dolomite, Niagaran, Iowa and Minnesota.

Hoyt limestone, Upper Cambrian or Ozarkian, New York.

Hudson River beds or group, Ordovician, New York, etc.

Hudson shale and schist, Ordovician, New York, etc.

Hull limestone, Trenton, Central Ontario.

Huntington limestone, Niagaran, northern Indiana.

Hunton formation, Silurian and Lower Devonian, Arkansas.

Hurrah slate, Post Ordovician, Alaska.

Hydraulic limestone, Silurian, New York, etc.

Indian Fields formation, Clinton, eastern Kentucky.

Indian Ladder beds, Eden, New York.

Inwood limestone, Ordovician(?), New York.

Irondequoit limestone, Upper Clinton, New York and Ontario.

Irasburg conglomerate, Ordovician, Vermont.

Iron Ridge ore bed, Upper Medinan, Wisconsin.

Isle La Motte sandstone, Ordovician, Vermont.
Izard limestone, Ordovician, Arkansas and Missouri.
Jacksonburg limestone, Mohawkian, New Jersey.
James River formation, Lower Ordovician, Nova Scotia.
Jasper limestone, Big Buffalo series, Arkansas.
Jefferson City limestone, Canadian, Missouri.
Jessamine series, Trenton, Kentucky.
Joachim limestone, member of St. Peter sandstone, Missouri.
Jonesboro limestone, Canadian, Tennessee and Virginia.
Juniata sandstone and shales, Lower Medinan, Pennsylvania and Maryland.
Jupiter River formation, Anticostian, Anticosti Island, Quebec.
Kagawong beds, Richmond, Ontario.
Keefer sandstone, Clinton, West Virginia, Pennsylvania and Maryland.
Kentucky marble (=Oregon dolomite), Black River, Kentucky.
Keppel dolomites, Silurian, Ontario.
Ketona dolomite, Upper Cambrian or Ozarkian, Alabama.
Key sandstone (=St. Peter), Big Buffalo series, Arkansas.
Keyser formation, Lowest Helderbergian, Maryland, Pennsylvania, etc.
Kigluaik series, Pre-Silurian, Alaska.
Kimmswick limestone, Black River, Missouri and Illinois.
Kirkfield limestone, Trenton, Ontario.
Kittatinny limestone, Ozarkian and Canadian, New Jersey, etc.
Klutena series (schists) Pre-Silurian, Alaska.
Knox dolomite, Cambrian and Ozarkian, east Tennessee, etc.
Kokomo limestone, Upper Cayugan, Indiana.
Kugruk group, Silurian or Devonian, Alaska.
Kuzitrina formation, Pre-Silurian, Alaska.
Laketown dolomite (=Fusselman), Niagaran, Utah.
Lancaster limestone, Canadian and Ordovician, Pennsylvania.
Laughery formation, Richmond, Indiana, etc.
Laurel limestone, Upper Niagaran, Indiana, Kentucky, and Tennessee.
Lauzon formation, Quebec group, Eastern Canada.
Lebanon beds (=Richmond), early Medinan, Ohio Valley.
Lebanon (=Glade) limestone, Stones River, Tennessee, etc.
Leclaire limestone, Cayugan, Iowa and Illinois.
Lego limestone, Upper Niagaran, west Tennessee.
Lehigh limestone, Mohawkian, eastern Pennsylvania.
Leipers Creek limestone, Richmond, Tennessee.
Leipers formation, Cincinnatian, Tennessee.
Lenoir limestone, Chazyan, east Tennessee and Virginia.
Leon series, Silurian (?), Texas.
Leray limestone, member of Lowville formation, Black River, New York and Ontario.
Levant, Silurian, Pennsylvania.
Levis formation, Canadian, Quebec and Ontario.
Lewiston (=Queenston shale), Richmond, New York, etc.
Lewiston limestone, Silurian-Early Devonian, Pennsylvania and West Virginia.
Lexington limestone, Trenton, Kentucky.
Leyden phyllite, Ordovician (?), Massachusetts.
Liberty beds, Richmond, Ohio Valley.
Liberty Hall limestone, Black River, Virginia.
Little Falls dolomite, Ozarkian, New York.
Lobelville formation, Upper Niagaran, West Tennessee.
Lockport dolomite, Niagaran, New York and Ontario.
Lockport group or stage, Upper Niagaran.
Logana limestone (=Hermitage), Trenton, Kentucky.
Lone Mountain limestone, Early Silurian, Nevada.
Lone Mountain quartzite, Lower Ordovician, Nevada.

Longfellow formation, Canadian, Arizona.

Longwood shale limestone, Lower Cayugan, New Jersey and New York.

Lorraine formation, Cincinnatian, New York and Ontario.

Louisville limestone, Niagaran, Kentucky, Tennessee, and Indiana.

Lower Blue, Black River, Wisconsin, etc.

Lower Buff (=Minneapolis limestone), Black River, Minnesota, Wisconsin, etc.

Lower Magnesian dolomite, includes Cambrian, Ozarkian and Canadian, Mississippi Valley.

Lowville limestone, Black River, New York, Canada, Appalachian and Mississippi Valleys.

Lucas dolomite, Upper Monroan, Michigan, etc.

Lulbegrud clay, Clinton, Eastern Kentucky.

Macastey black shale, Trenton, Anticosti Island, Quebec.

Maddox limestone, Upper Medinan and Clinton, West Tennessee.

Madison bed (=Saluda), Richmond, Indiana.

Madison sandstone, Upper Cambrian or Ozarkian, Wisconsin.

Magnesian limestone, has included Cambrian to Silurian, Mississippi Valley.

Malignant Cove formation, Ordovician, Nova Scotia.

Manhattan schist, Ordovician (??), New York.

Manitou limestone, Canadian, Colorado.

Manitoulin member of Cataract, Upper Medinan, Ontario.

Manlius limestone, Upper Cayugan, New York and New Jersey.

Mannie shale, Richmond, Tennessee.

Maquoketa shale, Richmond, Iowa, Illinois, Missouri, and Minnesota.

Marble Hill marble, Richmond, Indiana.

Marsouin series, Mohawkian, Quebec.

Martinsburg shale, Trenton-Cincinnatian, West Virginia, Pennsylvania, Maryland, and Virginia.

Mascarene series, Silurian, New Brunswick.

Massanutten sandstone, Cincinnatian and Medinan, Virginia.

Matinal, Ordovician, Pennsylvania.

Maxford formation, Cambrian (not Ordovician), Utah.

Maysville group, Upper Cincinnatian.

Mayville dolomite, Niagaran, Wisconsin.

Maywood formation, Upper Cambrian (not Silurian), Montana.

McAdam formation, Niagaran, Nova Scotia.

McCoytown sandstone, Silurian, Pennsylvania.

McCune dolomite, Trenton, Missouri.

McKenzie formation, Lower Cayugan, West Virginia, Pennsylvania and Maryland.

McMicken member, Eden, Ohio Valley.

McMillan formation, Cincinnatian, Ohio Valley.

Medina sandstone, Silurian, New York, Ontario, etc.

Medinan series or epoch, Silurian.

Memphremagog slates, Ordovician, Vermont.

Mendota dolomite, Upper Cambrian or Ozarkian, Wisconsin.

Meniscus beds, Niagaran, west Tennessee.

Mifflintown limestone, Silurian, Pennsylvania.

Millersburg division of Cynthiana, Trenton, Kentucky.

Million beds, Eden, Kentucky.

Millstream series, Ordovician, New Brunswick.

Mimbres limestone, Canadian, New Mexico.

Minneapolis limestone (=Lower Buff), Black River, Minnesota.

Mistassini limestone, Ordovician (?), Quebec.

Moccasin limestone, Black River, Virginia and Tennessee.

Moduria limestone, Ordovician, Georgia.

Mohawk limestone. *See* Mohawkian.

Mohawkian series or epoch, Middle Ordovician.

Monarck formation, Devonian (not Silurian), Montana.

Monclova sandstone (=Sylvania), Monroan, Ohio.

Monroan =Upper Cayugan and Helderbergian.

Montecello terrane, Silurian, Iowa.

Montgomery limestone (=Brassfield), Upper Medinan, Ohio.
Montgomery limestone, Niagaran, California.
Montoya limestone (Richmond), Texas and New Mexico.
Moreau sandstone, Ozarkian, Missouri.
Morehouse quartzite, Ordovician and Silurian (?), Utah.
Mosheim limestone, Stones River, Tennessee and Virginia.
Mottled limestone, Black River or Richmond, Canada.
Mount Auburn beds, Maysville, Ohio Valley.
Mount Hope beds, Maysville, Ohio Valley.
Mount Joli massive, Ordovician, Quebec.
Mount Pleasant phosphate (=Bigby), Trenton, central Tennessee.
Mount Washington series, Ordovician, Massachusetts.
Moydart formation, Niagaran, Nova Scotia.
Murat limestone, Chazyan, Virginia.
Murfreesboro (Central) limestone, Stones River, Tennessee and Virginia.
Nashville group, Trenton and Maysville, Tennessee.
Natural Bridge limestone, Canadian, Virginia.
Nazareth cement rock, Trenton, northeast Pennsylvania.
Neeleytown limestone, Ozarkian, New York.
Newburgh limestone, Cambrian-Ordovician, New York.
Newsom shale (=Waldron), Upper Niagaran, Tennessee.
Niagaran series or epoch, Silurian.
Nicholas bed of Cynthiana, Trenton, Kentucky.
Nisky limestone, Ordovician, Pennsylvania.
Nittany limestone, Canadian, Pennsylvania.
Noblesville dolomite, Niagaran, northern Indiana.
Noix oolite, Upper Medinan, Illinois and Missouri.
Normandy limestone, Middle Ordovician, Tennessee.
Normanskill shale, Chazyan, New York, New Jersey, etc.
North Peak formation, Ozarkian and Utah.
Octoraro schist, Ordovician, Pennsylvania.
Oldham limestone, Clinton, eastern Kentucky.
Oneida conglomerate, Upper Medinan, New York.
Oneota dolomite, Ozarkian, Iowa.
Onondaga salt group (=Salina).
Orchard Creek shale (lower member of Girardeau), Upper Medinan, Illinois and Missouri.
Oregon dolomite, Black River, Kentucky.
Oregonia division of Arnheim, Richmond, Ohio Valley.
Osgood limestone, Niagaran, Ohio Valley.
Oswego sandstone, Cincinnatian, New York and Pennsylvania.
Ottosee shale, Blount group, Tennessee and Virginia.
Ouachita shale, Canadian, Arkansas.
Pacific sandstone, Big Buffalo series, Arkansas.
Paint Lick member, Eden, Kentucky.
Pamelia limestone, Stones River, Quebec, Ontario, and New York.
Panola formation, Upper Medinan to Devonian, eastern Kentucky.
Paradise limestone, Silurian, Utah.
Paris bed, Trenton, Kentucky.
Peachbottom slates, Ordovician (?), Maryland.
Pearisburg limestone, Upper Chazyan, Virginia and Tennessee.
Peekskill granite, Ordovician (?), New York.
Pelham (Trenton) limestone, Ordovician, Alabama.
Pembroke formation, Silurian, Maine.
Perryville limestone, Trenton, Kentucky.
Phillipsburg limestone, Canadian, Quebec, etc.
Picton limestone, Trenton, Quebec, etc.
Pierce limestone, Stones River, Tennessee and Virginia.
Pittsford shale, Lower Cayugan, New York.
Platteville limestone, Black River, Illinois, Iowa, and Minnesota.
Plattin limestone, Black River, Missouri and Illinois.

Plum Creek clay, Clinton, eastern Kentucky.
Pogonip limestone, Canadian-Black River, Nevada.
Pohenagamuk formation, Ordovician, Quebec.
Point Pleasant limestone, Upper Trenton, Ohio and Kentucky.
Polk Bayou limestone (lower), Black River, Arkansas.
Polk Bayou limestone (upper), Richmond, Arkansas.
Polk Creek shale, Cincinnatian, Arkansas.
Porcupine group, Silurian-Devonian, Alaska.
Port Clarence limestone, Silurian and Ordovician, Alaska.
Potosi limestone, Ozarkian, Missouri.
Potsdam sandstone, Upper Cambrian or Ozarkian, New York and Quebec.
Poughquag quartzite, Cambrian-Ordovician, Connecticut.
Powell limestone, Canadian, Arkansas.
Poxino Island shale, Cayugan, New York, etc.
Poxino shale. *See* Poxino Island Shale.
Prairie du Chien limestone, Ozarkian and Canadian, Iowa and Wisconsin.
Proctor dolomite, Ozarkian, Missouri.
Prosser limestone, Trenton, Upper Mississippi Valley.
Puckmummis schist, Post Ordovician, Alaska.
Pulaski shale, Cincinnatian, New York and Ontario.
Put-in-Bay dolomite, Lower Monroan, Ohio and Michigan.
Quantico slate, Ordovician (?), Virginia.
Quebec City formation, Trenton, Quebec.
Quebec group, Cambrian and Ordovician, of eastern Canada.
Queenston shale, Richmond, New York and Ontario.
Quoddy shale, Silurian, Maine.
Racine dolomite, Niagaran, Wisconsin.
Rainy Mountain limestone, Ordovician, Oklahoma.
Raisin River dolomites, Lower Monroan, Michigan.
Razor Mountain group, PreOrdovician, Alaska.
Receptaculites limestone (=Kimmswick), Black River, Missouri.
Red Mountain limestone, Upper Medinan and Clinton, Alabama.
Red Warren limestone, Silurian (?), Utah.
Reedsville shale, Trenton and Eden, Pennsylvania.
Rensselaer grit, Silurian or Devonian, eastern New York.
Richmond group of stage, Lower Medinan.
Richmondian. *See* Richmond.
Ridley limestone, Stones River, Tennessee.
Riga schist, Ordovician, Massachusetts.
Robson limestone, Lowest Ordovician, British Columbia and Alberta.
Rochdale limestone, Cambrian-Ordovician, New York.
Rochester shale, Upper Clinton, New York, etc.
Rockland formation, Cambrian-Ordovician, Maine.
Rockland limestone, Mohawkian, central Ontario.
Rockmart slates (=Athens), Chazyan, Georgia.
Rockport limestone member, Cambrian-Ordovician, Maine.
Rockwood formation, Medinan, Tennessee and Alabama.
Rogers Gap division of Cynthiana, Trenton, Kentucky.
Romaine formation, Canadian, Mingan Island, Quebec.
Rosendale water lime, Cayugan, New York.
Ross Brook formation, Niagaran, Nova Scotia.
Roubidoux sandstone, Canadian, Missouri.
Rysedorph conglomerate, Trenton, New York.
Sabula terrane, Silurian, Iowa.
Saccharoidal sandstone = St. Peter sandstone.
St. Clair limestone, Upper Medinan, and Clinton, Arkansas, Oklahoma.
St. Elizabeth formation. *See* Elizabeth.
St. François limestone, Cambrian-Ordovician, Missouri.
St. Joseph limestone, Cambro-Ordovician, Missouri.
St. Lawrence (Mendota) limestone, Ordovician, Minnesota, etc.
St. Peter sandstone, Big Buffalo series, Mississippi Valley.

St. Thomas sandstone, Cambro-Ordovician, Missouri.
Salina group=Lower Cayugan.
Salmon River sandstone (=Oswego), Cincinnatian, New York.
Saltillo limestone (=Hermitage) Trenton, Tennessee.
Saluda bed (=Whitewater) Richmond, Ohio Valley.
Salvisa division of Perryville, Trenton, Kentucky.
San Saba series, Silurian (?), Texas.
Santa Rita limestone, Silurian, New Mexico.
Saratogan =Lower Ozarkian or Upper Cambrian.
Savoy schist, Ordovician, Massachusetts.
Scalent, Silurian, Pennsylvania.
Schaghticoke shale, Canadian, New York.
Schenectady beds, Trenton, New York.
Sequatchie formation, Richmond, east Tennessee.
Sevier shale, Ordovician, Tennessee and Virginia.
Sexton Creek limestone (=Brassfield), Upper Medinan, Illinois and Missouri.
Shakopee dolomite, Canadian, Minnesota.
Shawangunk conglomerate and grit, Upper Medinan, New York, New Jersey, and Pennsylvania.
Sheguindah beds, Eden, Ontario.
Shelby dolomite, Upper Niagaran, New York.
Shenandoah group, Canadian and Ordovician, Virginia.
Sheridan formation, Ordovician, Michigan.
Sheridan sandstone, Silurian, Maine.
Sillery formation, Canadian, Quebec.
Simpson formation, Stones River, Oklahoma.
Skajit formation, Upper Silurian, Alaska.
Slatington shale, Silurian, Arkansas.
Snake Hill shale, Trenton, New York.
Sneed's limestone, Big Buffalo series, Arkansas.
Sneedville limestone, Upper Cayugan, Tennessee.
Sodus shale, Lower Clinton, New York.
Solomon schist, Pre-Ordovician, Alaska.
South Tunnel limestone (=Osgood), Lower Niagaran, Tennessee.
Southgate member, Eden, Ohio Valley.
Sowik limestone, Ordovician, Alaska.
Sparry limestone, Ordovician (?), Vermont.
Springfield dolomite, Upper Niagaran, Ohio.
Stewartville dolomite, Trenton, Upper Mississippi Valley.
Stissing limestone, Cambrian or Lowest Ordovician, New York.
Stockbridge limestone, Cambro-Ordovician, New York.
Stone House formation, Cayugan, Nova Scotia.
Stonehenge limestone, Canadian, Pennsylvania and Maryland.
Stones River group, Lower Chazyan.
Stony Mountain formation, Richmond, Manitoba.
Stringtown shale, Chazyan, Arkansas.
Sunset division of Arnheim, Richmond, Kentucky and Ohio.
Surgent, Silurian, Pennsylvania.
Swan Creek limestone, Maysville, Tennessee.
Swan Peak quartzite, Ordovician, Utah.
Swift Current limestone, Black River, Ontario.
Swift Water series, Silurian, New Hampshire.
Sylvan shale, Richmond, Oklahoma.
Sylvania sandstone, Monroan, Ohio, etc.
Syracuse shale, Lower Cayugan, New York.
Talihina chert, Ordovician, Oklahoma.
Tatalina group, Ordovician (?), Alaska.
Tate member, Maysville, Kentucky.
Tatina group, Ordovician, Alaska.
Taylors Ridge, Silurian, Georgia.
Taylorville slate, Silurian (?), California.
Tellico sandstone, Blount group, Tennessee and Virginia.
Tentaculite limestone=Manlius.
Tetagouche series, Ordovician, New Brunswick.
Thebes formation, Richmond, Illinois and Missouri.
Theresa dolomite, Upper Cambrian or Ozarkian, New York.
Thorofare andesite, Silurian, Maine.
Thorold sandstone, Upper Medinan, New York and Ontario.
Toll Pit beds, Silurian, Michigan.
Tomichi limestone, Ordovician, Colorado.

Tonoloway limestone, Upper Cayugan, West Virginia, Pennsylvania, and Maryland.

Totsen series, Silurian, Alaska.

Trenton group, Upper Mohawkian.

Trenton limestone, Mohawkian, New York, etc.

Tribes Hill limestone, Canadian, New York.

Tuscarora sandstone, Upper Medinan, Pennsylvania, West Virginia, and Maryland.

Tymochtee beds, Lower Monroan, Ohio, and Michigan.

Tyner formation, Middle Ordovician, Oklahoma.

Tyrone beds (=Bald Eagle), Cincinnatian, Pennsylvania.

Tyrone limestone, Black River, Kentucky.

Upper Blue limestone, Black River, Wisconsin, etc.

Upper Buff dolomite, Black River, Wisconsin.

Ute limestone, Cambrian-Silurian, Utah, Nevada.

Utica shale, Cincinnatian, New York, Ohio, and Pennsylvania, etc.

Valcour limestone, Chazyan, Champlain Valley.

Valdez formation, Silurian, Alaska.

Variegated beds, Niagaran, West Tennessee.

Vernon shales, Lower Cayugan, New York.

Versailles beds, Richmond, Ohio Valley.

Vinalhaven rhyolite, Silurian ?, Maine.

Viola limestone, Trenton, Oklahoma.

Waco limestone, Clinton, eastern Kentucky.

Waits River limestone, Ordovician, Vermont,

Waldron shale, Upper Niagaran, Indiana, Kentucky, and Tennessee.

Wales series, Silurian, Alaska.

Wappinger Valley limestone, Cambrian-Ordovician, New York.

Warren beds. *See* Arnheim.

Washington phase of Waits River limestone, Ordovician, Vermont.

Waterlime. *See* Cayugan.

Watertown limestone, Black River, New York and Canada.

Waterville slates, Ordovician, Maine.

Waubakee limestone, Cayugan, Wisconsin.

Waukesha dolomite, Niagaran, Wisconsin.

Waynesville formation, Richmond, Ohio Valley.

Wekwemikongsing, Maysville, Ontario.

Wells chert, Canadian, Tennessee.

Weskeas quartzite member, Cambrian-Ordovician, Maine.

West Union limestone, Clinton, Ohio.

Westfield serpentine, Ordovician (?), Massachusetts.

Whatley bed, Ordovician (?), Massachusetts.

Whitewood limestone, Early Silurian (?), Wyoming and South Dakota.

Whirlpool sandstone, Upper Medinan, New York and Ontario.

White limestone, Silurian, Colorado.

White Oak Mountain, Upper Medinan, Tennessee.

Whites Bend limestone (=Laurel), Upper Niagaran, Tennessee.

Whitewater formation, Richmond, Ohio Valley.

Whitmores Ferry bed, Ordovician (?), Massachusetts.

Wilbur limestone, Cayugan, New York.

Williamson shale, Clinton, New York.

Willow River limestone, Canadian, Iowa.

Wills Creek shale, Upper Cayugan, West Virginia, Pennsylvania, and Maryland.

Wilmore limestone, Trenton, Kentucky.

Winchester limestone, Ordovician, Kentucky.

Winfield limestone, Canadian, Missouri.

Winnipeg sandstone, Ordovician, Manitoba.

Wolcott limestone, Clinton, New York.

Woodburn division of Flanagan, Trenton, Kentucky.

Wykoff limestone, Richmond, Minnesota, Iowa.

Wyoming division, Silurian (?), Texas.

Yellville limestone, Canadian, Arkansas.

Yule limestone, Early Silurian, Colorado.

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OZARKIAN-ORDOVIC

GENERAL TIME SCALE				*Newfoundland*	*Cape Breton and New Brunswick*	*Levis and Quebec, Canada*	*Slate belt of Eastern New York*	*Che*
SILURIAN								
ORDOVICIAN	CINCINNATIAN	MAYSVILLE	Mc Millan (Ohio)					
			Fairview (Ohio)					
		EDEN	Frankfort (N.Y)					
			Utica (N.Y.)					Shal
	MOHAWKIAN	TRENTON	Cynthiana (Ky)					
			Perryville (Ky.)					
			Flanagan (Ky)					
			Bigby (Ky.)					Cumb
			Wilmore (Ky.)			Quebec City formation with conglomerates (Rysedorph) near base	Snake Hill shale	Nasc
			Hermitage (Ky.)					
			Curdsville (Ky.)				Rysedorph conglomerate	Glen
		BLACK RIVER	Kimmswick (Mo.)				Hudson R. slate	
			Decorah (Iowa)	Quebec I–M (N–P in part)				Amst
			Watertown (N.Y.)					
			Lowville (N.Y.)					Low
	CHAZYAN	BLOUNT	Ottosee (Tenn.)					
			Tellico (Tenn.)					
			Athens (Tenn.)				Normanskill shale (Lower Dicellograptus zone)	
			Holston (Tenn.)				Hudson River slate	Valc
		STONES RIVER	Lebanon (Tenn)					
			Ridley (Tenn.)	?				Crow
			Pierce (Tenn.)					
			Murfreesboro (Tenn.)					Day
			Mosheim (Tenn.)					
	BIG BUFFALO SERIES		Jasper (Ark.)					
			St. Peter (Minn.)					
			Everton (Ark.)					
			Sneeds (Ark.)					
CANADIAN	UPPER		Bellefonte (Pa.)	Quebec D–H (N–P in part)	Bretonian { Asaphellus zone (C^3c^2) Dictyonema flabelliforme zone (C^{3c}) Peltura zone (C^{3b}) Parabolina zone (C^{3a})	Levis { Diplograptus dentatus zone Didymograptus bifidus zone Phyllograptus typus zone Clonograptus flexilis zone Limestone conglomerates (Pebbles of Ozarkian ? age) Sillery	[illegible] Deep Kill { Diplograptus dentatus zone Didymograptus bifidus zone Phyllograptus anna zone Tetragraptus zone (Clonograptus zone at base)	Beekmantown limestone
			Axeman (Pa.)					
	MIDDLE		Nittany (Pa.)					
	LOWER		Stonehenge (Pa.)					
			Dictyonema flabelliforme bed				Schaghticoke shale	
OZARKIAN	UPPER		Gasconade (Mo.)				Hudson River slate	Litt
			Copper Ridge (Tenn)					
			Eminence (Mo.)					
	LOWER		Little Falls (N.Y.)					Little
			Hoyt (N.Y.) CAMBRIAN ?	?				Ho
			Potsdam (N.Y.)					Po
CAMBRIAN	UPPER		St. Croixan				Cambrian slates and sandstones	
	MIDDLE		Acadian					
	LOWER		Waucoban	Quebec A-C				

BULLETIN 92 PLATE I

RRELATION TABLE

	North central New York	APPALACHIAN VALLEY-NEW JERSEY-VIRGINIA			APPALACHIAN VALLEY IN TENNESSEE		
		New Jersey & N.E.Penn.	Maryland Basin	Central Virginia	Eastern area	Central area	Western area
		Shawangunk	Tuscarora	Massanutten sandstone		Clinch	Clinton
sandstone	Lorraine						
shale			Red sandstone		?	"Bays ss." (as mapped)	Fairview ls. (Bays as mapped)
sh.	Frankfort sh. (Brayman)	Martinsburg shale Eden ss. member	Martinsburg shale Eden ss.	Martinsburg shale	?	Sevier shale (as mapped)	Eden
shale							
sh.	Upper Trenton ls.	Shales	Sandy shale				Cannon ls.
sh.	Middle Trenton ls.	Nazareth ls. (cement rock) (Lehigh ls.)	Black shale				
			Shaly ls.				Hermitage
s.	Lower Trenton ls.			"Trenton ls"	Bays ss. (typical)		Chickamauga limestone
		Jacksonburg ls. (Black River & L. Trenton limestone)	Upper Chambersburg	Liberty Hall ls.	Sevier shale	Mocassin ls.	Mocassin
ls.			Chambersburg ls.				
	Watertown ls.						
	Leray ls. Lowville ls.		Middle Chambersburg (Lowville)	Lowville ls.		Lowville ls.	
					Ottosee sh.	Ottosee sh.	?Ottosee
					Tellico ss.		
				Athens sh.	Athens sh.		
			Lower Chambersburg	Murat ls.		Holston ls.	?Holston
	Pamelia ls.						
			Stones River group				Stones River ls.
					Lenoir ls.	Lenoir ls.	
					Mosheim ls.	Mosheim ls.	
		Coplay ls.	Beekmantown with Stonehenge member at base	Natural Bridge limestone	Jonesboro ls. (? Pelham)		
	Tribes Hill ls.	Kittatinny ls.					
				Knox dolomite		Chepultepec	
						Copper Ridge chert	
					Lower Knox	Lower Knox	Lower Knox
	Theresa ls.	Allentown ls.	Conococheague f.				
	Potsdam ss.						
				Nolichucky shale	Nolichucky shale		Conosauga sh.
			Elbrook ls. Waynesboro ss.	Honaker ls. Russell-Buena Vista	Maryville ls., Rogersville shale, Rutledge ls. Russell shale		Rome sh. and ss.
		Hardyston ss.	Tomstown ls. Antietam ss. Harpers schist, Weverton ss.	Sherwood ls. Quartzites and shales	Beaver limestone Apison shale		

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OZARKIAN-ORDOVICIA

GENERAL TIME SCALE				*Central Pennsylvania*	*Alabama*	*Cincinnati dome*	*Nashville dome*	*East Missouri*
SILURIAN				Juniata		Richmond (Arnheim)		[illegible]
ORDOVICIAN	CINCINNATIAN	MAYSVILLE	McMillan (Ohio)	Oswego (Bald Eagle)		[illegible]		
			Fairview (Ohio)	Shale		[illegible]	Leipers (Swan C	
		EDEN	Frankfort (N.Y.)		Eden shale	Eden [illegible]		
			Utica (N.Y.)			Fulton		
	MOHAWKIAN	TRENTON	Cynthiana (Ky.)	Trenton ls.		Cynthiana [illegible]		
			Perryville (Ky.)	Reedsville shale		Perryville [illegible]	Catheys f.	
			Flanagan (Ky.)			Flanagan [illegible]		
			Bigby (Ky.)		Bigby ? ls.	Lexington ls. Bigby (Paris in part)	Nashville Bigby [illegible]	
			Wilmore (Ky.)			Wilmore ls.		McCune dol.
			Hermitage (Ky.)	Lower Trenton limestone		Hermitage (Logana)	Hermitage ls. [illegible]	
			Curdsville (Ky.)			Curdsville ls.	Curdsville	Upper Prosser
		BLACK RIVER	Kimmswick (Mo.)		Christiania fauna			Kimmswick (Bryant)
			Decorah (Iowa)	Amsterdam ls.		Decorah sh. (Upper)		Decorah (Auburn)
			Watertown (N.Y.)					
			Lowville (N.Y.)	Lowville ls.		Lowville [illegible]	Lowville (Carters)	Bryant ls. (Lower) [illegible]
	CHAZYAN	BLOUNT	Ottosee (Tenn.)					
			Tellico (Tenn.)					
			Athens (Tenn.)		Athens (Rockmart sl.)	High Bridge ls.		
			Holston (Tenn.)					
		STONES RIVER	Lebanon (Tenn.)	Pamelia ls.	Stones River ls.	Camp Nelson ls.	Lebanon ls.	
			Ridley (Tenn.)				Ridley ls.	
			Pierce (Tenn.)				Pierce ls.	
			Murfreesboro (Tenn.)				Murfreesboro ls.	
			Mosheim (Tenn.)		Attalla conglomerate			
	BIG BUFFALO SERIES		Jasper (Ark.)					
			St. Peter (Minn.)			St. Peter (in wells)		St. Peter ss. [illegible]
			Everton (Ark.)					
			Sneeds (Ark.)					
CANADIAN	UPPER		Bellefonte (Pa.)	Bellefonte dol.				Powell ls.
			Axeman (Pa.)	Axeman ls.				Cotter ls.
	MIDDLE		Nittany (Pa.)	Nittany dol.	Ceratopea fauna		Wells chert	Jefferson City ls. Winfield ls.
	LOWER		Stonehenge (Pa.)	Stonehenge ls.	Pelham ls.			Roubidoux ss.
			Dictyonema flabelliforme bed	Represented ?				
OZARKIAN	UPPER		Gasconade (Mo.)		Chepultepec ls. (Upper Knox)	Not exposed	Not exposed	Gasconade ls. (Gunter ss. member)
			Copper Ridge (Tenn.)		Copper Ridge ch.			Proctor dol.
			Eminence (Mo.)	Represented	"Lower Knox"			Eminence chert
	LOWER		Little Falls (N.Y.)		Bib dol.			Potosi ls.
			Hoyt (CAMBRIAN ?)		Ketona dol.			
			Potsdam		Briarfield dol.			
CAMBRIAN	UPPER		St. Croixan	Represented	Nolichucky sh. Maryville ls. Rogersville sh.			[illegible] dol.
	MIDDLE		Acadian					
	LOWER		Waucoban					

CORRELATION TABLE

	Arkansas Northern	Arkansas West Central (Ouachitas)	Wisconsin Illinois	Minnesota and Northern Iowa	Manitoulin Ids. Lake Huron	Central Ontario	Esthonia, Russia	Great Britain Wales	Great Britain Scotland
	Fernvale	Fernvale	Fernvale	Dubuque dol.	Richmond	Richmond.	Borkholm Ls.(F²)	Llandovery	Birkhill
Polk Bayou limestone					Wekwemikongsing	Pulaski sh.		?	
					Sheguindah	Eden sh.			Hartfell (Upper)
		Polk Creek shale				? Utica sh.			
					Collingwood	Collingwood sh.	Lyckholm ls.(F¹)		
		Big Fork chert	Galena dol.						?
							Wesenberg ls.(E) Wassalem ls.(D³)		
				Stewartville dol. (Madurea bed)		Picton ls.	Kegel ls. (D²)	Caradoc ss. or Bala	Hartfell (Lower)
							Jewe ls. (D¹)		
				Prosser limestone	Prosser Curdsville	Hull (Curdsville) Rockland ls. Glen Falls ls.	Itfer ls. (C³)		
	Kimmswick ls.								
			Decorah shale	Upper Blue Upper Buff Beloit ls.	Cloche Island.		Kuckers shale(C²)		
	Plattin ls.		Platteville	Lower Blue Lower Buff Glenwood shale	Swift Current (Leray) Lowville	Leray ls. Lowville ls.	Echinospherites ls.(C¹)		?
							?Orthoceras ls.(B³)		
							?Glauconite ls.(B²)		
Izard limestone		Stringtown sh.							
								Llandeilo	Glenkiln
						Pamelia ls.			
								Llandovery (Upper)	?
	Jasper ls. St. Peter with Joachim ls. member Everton ls. Sneeds ls.	Blakeley ss.	St. Peter sandstone					?	?
Yellville	Powell ls. Cotter ls. Jefferson City ls. Roubidoux ss.	Ouachita shale	Prairie du Chien	Shakopee dolomite			Glauconite ss.(B¹)	Arenig	Skiddaw.
							Dictyonema flabelliforme beds (Ungulite ss. at base)(A²)	Tremadoc	Durness
	Gasconade ls. (Gunter ss. member)			Oneota dolomite				?	
	Proctor dol.								
	Eminence ch.								
	Potosi ls.							?	
			Madison ss.						
			Mendota ls.						
	[illegible] Bonne Terre [illegible]	Crystal Mt. ss. Collier shale	St. Croixan	Jordan ss. St. Lawrence f. Franconia ss. Dresbach ss. Eau Claire ss. St. Simon ss.				Cambrian	
							Esthonia fm.(A¹)		

SILURIAN C

GENERAL TIME SCALE				Western New York and Ontario	Central and Eastern New York	APPALACHIAN VALLEY	
						Penn. Md. and Va.	Tennesse
DEVONIAN (HELDERBERGIAN)			Becraft (N.Y.)		Becraft form.		
			New Scotland (N.Y.)		New Scotland formation		
			Coeymans (N.Y.)		Coeymans ls.		
			Keyser (W.Va.)		Keyser ls. - Decker Ferry ls. (N.J.)		
CAYUGAN	UPPER		Manlius (N.Y.)		Manlius ls. (Tentaculite ls.)	Bossardville ls.	Sneedville
			Tonoloway (Md.)		Cobleskill ls.	Tonoloway ls.	
			Wills Creek (Md.)	Akron dol. (Bullhead) Bertie wl.		Wills Creek ls.	
			Bloomsburg (Pa.)			Bloomsburg ss.	
	LOWER		Salina - McKenzie (N.Y.) (Md.)	Salina (Onondaga salt group): Camillus sh. Syracuse sh. Vernon sh. Pittsford sh.	(N.Y.) (N.J.) High Falls sh.-Longwood sh.	McKenzie form.	
NIAGARAN	LOCKPORT		Louisville (Ky)				?Louisville ca
			Guelph (Canada)	Lockport ls.: Shelby dol.			
			Bob (Tenn) Beech River (Tenn)				
			Racine (Wis)	Gasport ls.			
			Waukesha (Wis)				
			Waldron (Ind)				
			Laurel (Ind)	Decew ls.			
	CLINTON		Rochester (N.Y.)	Rochester shale	Typical Clinton formation	Clinton group (Keefer ss. near top) (Cacapon member at base)	
			Irondequoit (N.Y.)	Irondequoit ls.			
			Williamson (N.Y.)	Williamson shale			
			Wolcott (N.Y.)	Wolcott ls.			
			Sodus (N.Y.)	Sodus shale			
MEDINAN	ALBION		Thorold (Arthrophycus ss.)	Albion sandstone: (New York) (Ontario) Thorold sandstone		Medina or Tuscarora sandstone	Clinch ss.: Brassfie
			Brassfield (Ky)	Cataract: Grimsby ss.	Oneida-Shawangunk-Green Pond		
			Noix (Mo)				
			Edgewood (Mo)	Cabot Head sh. Manitoulin beds			
			Whiteoak (Tenn)	Whirlpool ss.			White O
			Girardeau (Mo)				
	RICHMONDIAN		Elkhorn (Ind)	Queenston shale ?		Juniata sandstone and shale	Sequatc format
			Whitewater (Ind)				
			Maquoketa (Iowa)				
			Liberty (Ind)				
			Waynesville (Ohio)				
			Fernvale (W.Tenn)				
			Arnheim (Ohio)				
			Dubuque (Iowa)				
ORDOVICIAN (CINCINNATIAN)			Maysville	Oswego sandstone Pulaski formation	Oswego sandstone	Oswego sandstone (Bald Eagle)	Fairvie

ATION TABLE

BULLETIN 92 PLATE 3.

see	OHIO VALLEY West of Cincinnati	OHIO VALLEY Southern Ohio & Eastern Ky.	Northern and Central Ohio, Michigan, and Ontario	Iowa and Minnesota	Eastern Wisconsin
form.			Monroan: Detroit River {Lucas dol, Amherstburg dol., Anderdon ls., Flat Rock dol.} Sylvania ss. Bass Island {Raisin River dol., Put-in Bay dol., Tymochtee sh.}		
		Greenfield dol.	Greenfield dol.		
	Kokomo ls.				
		Hillsboro ss.		Anamosa, Leclair } Gower	Waubakee ls
ls:			Salina		
f.	Louisville ls (Bledsoe in Tenn)				
Clifton ls.		Cedarville dol. Springfield dol.	Cliff limestone		Guelph dol.
iver f.					
orm.				Hopkinton dol.	Racine dol.
					Waukesha dol.
sh.	Waldron sh.				Mayville dol.
Bend)	Laurel ls.				
ls. nnel) Maddox ls.	Osgood ls.	West Union ls.			
		(Ohio) "Niagara" sh. Dayton ls. Crab Orchard (Eastern Ky.): Alger {Estill clay, Waco ls, Lulbegrud sh}; Indian Fields {Oldham ls., Plum Cr. clay}	Undetermined		
d ls. s)	Brassfield ls. (Montgomery and Beavertown)				Iron Ridge ore bed
				Unnamed dolomite	
				Brainard shale	
	Elkhorn (Belfast)				?
	Versailles: Whitewater-Saluda (Madison and Fowler) (Kagawong in Manitoulin Islands)			Ft. Atkinson ls.	
				Maquoketa shale	"Cincinnati shales" (Richmond age)
	Laughery: Liberty			Clermont shale	
	Waynesville {Blanchester member, Clarksville " ", Ft. Ancient " "}				?
nnie sh pers Cr. ls				Wykoff ls.	
im	Arnheim {Oregonia member, Sunset member}				
				Dubuque dol.	
rmation	Maysville formation				

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SILURIAN

GENERAL TIME SCALE			*Northern Arkansas*	*East Missouri and Illinois*
DEVONIAN (HELDERBERGIAN)		Becraft (N.Y.)		
		New Scotland (N.Y.)		Bailey ls.
		Coeymans (N.Y.)		
		Keyser (W.Va.)		
CAYUGAN	UPPER	Manlius (N.Y.)		
		Tonoloway (Md.)		
		Wills Creek (Md.)		
		Bloomsburg (Pa.)		
	LOWER	Salina-McKenzie (N.Y.) (Md.)		
NIAGARAN	LOCKPORT	Louisville (Ky.)		Bainbridge ls. (East of St. Louis)
		Guelph (Canada)		
		Bob (Tenn.)		
		Beech River (Tenn.)		
		Racine (Wis.)		
		Waukesha (Wis.)		
		Waldron (Ind.)		
		Laurel (Ind.)		
	CLINTON	Rochester (N.Y.)	St.Clair ls.(Upper)	
		Irondequoit (N.Y.)		
		Williamson (N.Y.)	St Clair ls.(Middle)	
		Wolcott (N.Y.)		
		Sodus (N.Y.)	Blaylock ss.(west central Ark.)	
MEDINAN	ALBION	Thorold (Arthrophycus ss.)		
		Brassfield (Ky.)	St.Clair ls.(Lower)	Brassfield (Sexton Creek)
		Noix (Mo.)		Alexandrian Essex ls. Bowling Green dol. Noix oolite
		Edgewood (Mo.)		Edgewood ls. (Channahon, Cyrene member)
		Whiteoak (Tenn.		
		Girardeau (Mo.)		Girardeau ls. (Orchard Cr. shale at base)
	RICHMONDIAN	Elkhorn (Ind.)		
		Whitewater (Ind.)		
		Maquoketa (Iowa)	Cason shale	Thebes form. { ss. member shale "Maquoketa"
		Liberty (Ind.)		
		Waynesville (Ohio)		
		Fernvale (West Tenn.)	Fernvale shale (Upper Polk Bayou)	Fernvale shale
		Arnheim (Ohio)		
		Dubuque (Iowa)		
ORDOVICIAN (CINCINNATIAN)		Maysville		

RELATION TABLE

BULLETIN 92 PLATE 4

	Island of Anticosti	Arisaig, Nova Scotia	Wales and Shropshire	Scotland
		Arisaig series Stonehouse form.	Ludlow group	Ludlow
Hunton formation		Moydart form.	Wenlock limestone and shale	Wenlock
Anticostian	Chicotte Jupiter River	McAdam form. Ross Brook form. Beechhill Cove form.	Woolhope. ls. Tarannon Upper Llandovery	Tarannon Upper Birkhill
	Gun River Becsie River		Lower Llandovery	Lower Birkhill
	Gamachian (Ellis Bay) Charleton English Head		?	(Probable hiatus)